

# THE MONIST

## PHILOSOPHY AND RELIGION

THE most striking difference between European and Indian philosophy is perhaps to be found in their differing attitudes to the problem of the relation of religion to philosophy. Since the early days of Greek thought philosophy and religion have been at war. Xenophanes and Colophon raised the banner of revolt with his satiric description of the gods and goddesses: "Yes, and if oxen and horses and lions had hands, and could paint with their hands, and produce works of art as men do, horses would paint the forms of the gods like horses, and oxen like oxen, and make their bodies in the image of their several kinds." "The Ethiopians make their gods black and snub-nosed; the Thracians say theirs have blue eyes and red hair." He poured scorn on Homer and Hesiod for having ascribed to the Gods "all things that are a shame and a disgrace among mortals, stealings and adulteries, deceivings of one another." No wonder if under these onslaughts the religious faith of at least a few enlightened individuals began to shake. The seed was sown and under the withering dialectic of Socrates religion in the sense of the ordinary traditional religion was routed out by the philosophical schools, and the divorce between the two came to be the dominating note of European philosophy in the ages to come. It is true that in the Middle Ages there flourished some of the subtlest intellects that Europe has ever produced, and in them the demands of both seem to have been harmonized, but the dominant interest of the age was religious, and philosophy had to accomodate itself to the religious demands of the

age. In other words, philosophy had to play the second fiddle, and freedom, which is the very breath of philosophy, had to be sacrificed, so as not to offend the powers that were. In modern European philosophy, the philosophers that have made the history of philosophy were men suspected by theologians. Most of them refused to subscribe to the dogmas of the Church, and those that did were almost apologetic in their tone. No wonder if the Roman Catholic world still looks to the philosophers of the Middle Ages to square its philosophic hunger with its religious convictions. What is even more noteworthy in European philosophy is the sense of pride that philosophy has emancipated itself from the thralldom of religion. Philosophy has to reign supreme. It is from this standpoint that Indian philosophy is criticized as yet continuing in the stage that was transcended on the very threshold of Greek philosophy. On the other hand, in India it is this very divorce between philosophy and religion that is regarded as the weakest and the most vulnerable point in Western philosophy. To an average Indian, religion is the salt of life and a philosopher without religion sounds mere materialism, a thing of mere intellectual jugglery which may as well be not studied as studied.

It is clear that this difference of outlook is fundamental. Which is the correct attitude? Is any reconciliation between these two hostile attitudes possible? These are the questions that this paper seeks to answer.

In the very beginning we must frankly face the fact that there is no reconciliation possible between philosophy and the great historic religions in the dogmatic garbs which they have assumed during the lapse of centuries. For, philosophy, to be true to its name, must be based on reason, while the historic religions are all based on revelation, which claims to be above reason. Their appeal is to the faith of men. "Believe and ye shall be saved" is their

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exhortation. This can be the only justification for the elaborate theological systems which have been constructed on the basis of the simple teachings of the great Masters. The maintenance of such a system requires an elaborate organization of priesthood, a body of men often learned and as a rule tenaciously conservative. To them reason has no claim whatsoever to sit in judgment on the truths of revelation as conceived by them. Thus it is that a conflict between the free spirit of philosophy and a dogmatic theology was inevitable, and this conflict runs right through the history of European philosophy. The question arises at this stage as to how it is that Hinduism as a religion has not come into conflict with philosophy. *Prima facie* it stands out as an exception to the rule that mere faith and philosophy cannot live in peace together. Is it because the claims of reason are subordinated to the inspired Vedas and the Upanishads? in which case philosophy can subsist only in a restricted sphere with its wings effectually clipped. Or has philosophy been allowed full freedom of thought, and yet it has independently established the truth of the Vedas and the Upanishads? It is interesting to note that the highest *pramana* recognized by Indian philosophers is the *sabda pramana* (proof by the Word or Revelation). If this is taken literally, we cannot escape the conclusion that philosophy in India must at bottom be theology. This is a criticism which has been freely advanced against it by European scholars, who argue moreover that Indian philosophy has not advanced and cannot advance because it has no independence: it can only be a theology. The validity of this criticism, however, is challenged by Indian scholars like Mr. V. Subrahmanya Iyer. As an Advaitin he is not concerned to repudiate the correctness of this criticism so far as the other schools are concerned. So far as the Advaita is concerned, he maintains that Sankara was not a theologian; that his arguments are all

logical and philosophical, and the references to the Vedas were only meant to support the conclusions of his independent thought. If this claim could be substantiated, the conflict between philosophy and religion would be automatically solved. Has it been substantiated?

At the present day the Vedanta is the only living school of thought in India, and it subsists in the three forms of Advaitism, Visistha-Advaitism, and Dvaitism. In the last two the interest is predominantly religious; their ultimate authority is the Vedas and the Upanishads; their injunctions are mostly sacerdotal in character; their philosophy has its strength mostly in an astute criticism of Advaitic premises. Hence if an independent and a purely logical philosophy exists in India, it is to be found only in the Advaita of Sankara. In Advaitism the only reality is *Brahman*, which is *nirguna* or without quality. In the last resort there is complete identity between the human *atman* and the *Nirguna Brahman*, and a man attains *moksha* when he attains through *gyana* or knowledge this identity. It is clear that the *Nirguna Brahman* ex hypothesi cannot be personal, for a person implies qualities, i. e., it cannot be the God of religion to be placated with sacrifices or won over with gifts. If there was any doubt at all on this point it is set at rest by Sankara himself, for he identifies the God of religion or *Iswara* with *Saguna Brahman*. This is the God that may be worshipped, and rituals and ceremonies and the caste organization and a hundred other things find their justification with reference to it. But *Saguna Brahman* is not the reality, it is itself in the world of *maya*. To a *gyani*, to one who has mastered the reality of *Nirguna Brahman*, the *Saguna Brahman* has no worth. Religion with its restrictions is not binding on him, it has no joys or terrors for him. It is meant only for the masses, the ordinary struggling weak humanity, the ignorant. To them alone is the worship of *Iswara* real, not to the *gyani*.

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It is clear that the worship of an unreal *Iswara* is radically opposed to the deepest convictions of the truly religious. For them God represents the highest reality, and the innermost desire of their hearts is to walk in the path of righteousness as chalked out for them by His chosen Prophet, and to be at one with Him in a thorough communion of spirit. To them Sankara's *Iswara* is nothing but the merest mockery of God. No wonder if the orthodox Vaishnavaites speak of an Advaitin as a *nastika* (atheist.) It is a fact indeed that an average Advaitin manages to harbor in his mind the conception of a *Nirguna Brahman*, while devoutly performing the worship of *Saguna Brahman*, and fulfilling a hundred duties connected with the observance of caste regulations. He fails to find any inconsistency in his religious worship and his philosophical convictions. In fact he feels it to be his duty to carry on his usual worship, not because he believes in its efficacy or in its truth, but as an example to the younger members of his family, as a concession to the frailty of ordinary humanity. If this is the only reconciliation possible between the traditional Hinduism and philosophy, an honest thinker might well wonder if this is a reconciliation worth having, for it amounts to nothing more than a working compromise in no way differing from the way in which an astute lawyer or a business man lays the flattering unction to his soul that business is business, wherein the ordinary canons of morality find no place. Thus it is that Sankara can be said to have made good his claim to be a philosopher and no mere theologian. But religion from the standpoint of the Reality has been given a go-by. It is real only to those who do not know better, just as to an ignorant child a doll is as good as a living baby. There are so many Advaitins in India who think they have solved the problem of the relation of religion and philosophy, and yet it is only a solution, if it be a solution at all, in which

religion is given a place on sufferance, as a make-believe, a concession to the masses, ultimately of no more worth than the fleeting sense experience, which is the main stay of the theory of *maya*. From that standpoint religion is only a stage in the upward growth of man, something like what a kindergarten is in the education of children. Even if the teaching of Sankara on this point can be taken to be a definite solution, it is certainly not a solution of the problem we are dealing with. To the religious-minded, to the soul that is hungering to commune with a personal God, Sankara's philosophy appears cold and bleak. They feel bewildered before its ruthless logic, but they find it a logic, subtle yet unconvincing.

We noted in the very beginning of this paper that a reconciliation between philosophy and traditional religion is impossible, and the one exception that seemed at least plausible—Sankara's Advaitism—has been found to be no real exception. It is a discouraging conclusion, and so it is all the more necessary to try and see if it is possible to reconcile in any sense the warring claims of philosophy and religion. To do so we have to be clear about the significance of religion. To begin with a definition of it would be mere dogmatism. We should first of all be clear as to the implications of religious experience—for it is on this experience that the truth of religion is sought to be established—and then try to see in what sense a religion is possible that is not in flagrant contradiction to the dictates of reason. An appeal to reason in one form or another is inevitable, for the craving for religion finds expression in religions, and religions are not consistent with one another. As to which is worthy of our acceptance and our homage is—or at least ought to be—a matter of reasonable thought. Of course an ordinary man does not trouble to think about this; he is content to believe what his parents have believed: religion is to him something that has to be

accepted in the same spirit as the country in which he is born. But from this point of view the cannibalistic religion of the savage has as much right to credence as the highly advanced monotheistic religions. Even among the latter there are marked differences, and the superiority of Judaism or Christianity, Zoroastrianism or Mohammedanism, Hinduism or Buddhism can only be settled at the bar of reason. So, from the philosophic standpoint, the ultimate survival value of a particular religion or of religion in general must necessarily be determined by what harmonises most with reason, or at least by what comes least into conflict with reason.

All religion implies a belief in the existence of something that is superior to us: whether that something is conceived as a fetich, or as personified forces of nature, or as a plurality of divine beings, or as one supreme God. In any of these cases the recognition of a superior power implies in us a consciousness of our weakness and a sense of humility. The next step, whether psychologically or logically, is to have a desire to be on the right side of this superior power, and this marks the beginnings of worship. In primitive religions this worship is more the outcome of fear than of an exalted emotion. But with the growth of knowledge and a sense of human kinship a higher type of morality supervenes which affects the conception of God. He comes to be thought of not as a jealous, angry or blood-thirsty god, but as one who is full of mercy and love for struggling humanity, who is to be worshipped not as an ogre, but as a loving Father. This is the stage to which the highest religious consciousness has attained. God becomes not merely superior to us, He becomes supreme in the whole universe. In the language of metaphysics, he becomes the Ultimate Reality. Once this stage is attained, worship takes the form of love and devotion, till in the case of God-intoxicated individuals like the mystics and the

*bhaktas* (devotees of God) this love of God takes the form of an ecstatic union with God, which is mystic experience *par excellence*. It is on the reality of this experience that the truth of religion and the truth of God are asserted. It would hardly be fair to doubt the reality of it, for it is associated with some of the loftiest teachers of humanity in all climes and in all ages. Zoroaster, Isaiah, and Christ were all mystics. Even in more recent centuries the flow of mysticism has not been exhausted, as is evidenced by the line of Christian mystics in Europe like Eckhart or St. Francis or St. Teresa and the Sufi mystics of Persia; and India has ever been the home of mystics like Kabir and Chaitanya, Ramdas and Tukaram and a host of others. There is a remarkable resemblance in the outpourings of the mystic heart: love, joy, communion with the divine. To illustrate the point we may adduce a few examples from Kabir, the prince of mystics.

"If you merge your life in the Ocean of Life, you will find your life in the Supreme Land of Bliss."

"There is an endless world, O my brother, and there is the Nameless Being, of whom nought can be said.

Only he knows it who has reached that region: it is other than all that is heard and said.

No form, no body, no length, no breadth is seen there: how can I tell you that which it is?

He comes to the path of the Infinite on whom the grace of the Lord descends: he is freed from births and deaths who attains to Him.

Kabir says: 'It cannot be told by the words of the mouth, it cannot be written on paper:

It is like a dumb person who tastes a sweet thing—how shall it be explained?"

From the depths of his loving soul Thomas à Kempis cries out: "Ah, Lord God, when shall I be entirely united and lost in Thee, and altogether forgetful of myself? Thou

in me, and I in Thee; even so grant that we may in like manner continue together in one."

This desire to be at one with God is the mark of all religion, and the fulfillment of that desire marks the acme of a religious personality. For this reason we may define religion as an emotional realisation of the Ultimate Reality. It is certainly not intellectual in character. Mystics employ no arguments except poetic analogies; they make no pretense of convincing by logical arguments. In fact more often than not they refuse to talk to any except those who are already in some way prepared to feel a hunger for God.

So far there is nothing in mystic experience to antagonise philosophers. Both accept that man is not ultimate. Both believe in the existence of something supernatural, some sort of ultimate reality. They part company in two respects. The religious mystic emphasizes emotion and intuition, while the philosopher seeks to grasp the significance of the ultimate reality through reason. This difference is a matter of detail and need not be emphasized. The other difference is more pertinent to our inquiry: religion conceives the ultimate reality as a personal God, while philosophy on the whole conceives it as impersonal—on the whole, for philosophy differs with philosophers. Theism is a form of philosophy, but it would not be wrong to say that the weight of the greatest philosophers, whether in ancient Greece or modern Europe (e. g. Spinoza and Hegel) or India (e. g. Sankara), is thrown on the side against theism, and in the traditional conflict between philosophy and religion it is the anti-theistic philosophy that has had to bear the brunt of warfare.

For the purposes of this paper it would be too long to substantiate the position that the ultimate reality must be conceived as impersonal, but to avoid the charge of dogmatism we shall briefly point out the main difficulties involved in theism. First of all, the attributes of omnipresence,

omniscience and omnipotence are not reconcilable with one another. Omniscience involves a knowledge of the future and this gives rise to the dilemma: either this foreknowledge must come true, which means a palpable limit to omnipotence, or omnipotence must involve the possibility of doing anything at any time, in which case foreknowledge loses its edge. It is possible to argue that God cannot be conceived as an irresponsible despot, but that He is Himself bound by the laws of His own devising; that even He is bound by His own laws of righteousness and justice. This is an eminently sensible position to maintain, but it reduces the compatibility of omnipotence and omniscience to mere verbosity. Further, personality implies finiteness. The very rise of this conception has been due to the necessity of expressing the play of a finite human self on the stage of life. There has been an inveterate tendency on the part of human beings to be anthropomorphic and to conceive God in the image of man, a procedure which can hardly be countenanced by sober reason. To conceive Him as a personality is to make Him finite, when the essence of God is His infinitude in all directions. The conception of personality may be the highest possible to bring out the superiority of man on earth. Whether it is so high as to be applicable even to the Highest is certainly open to question. The general prejudice against describing God or the Ultimate Reality as impersonal is for the most part due to the mistaken idea that impersonality implies lifelessness, rigidity, inertia. Far from this being the case, the philosophers who emphasize the impersonality of the Ultimate emphasize it as a principle of activity essentially rational.

But the theist continues to argue: "From your standpoint what becomes of worship and the worth of mystic experience?" The answer to this is that worship is only the homage of the heart to what our head recognises as supreme on rational grounds. No sane person has ever

arrogated to himself the powers of God, though the misdirected zeal of followers may at times have conferred the halo of divinity on their favorite heroes. On the other hand, every person who has not been victimised by the cheap logic of pessimism or of naked atheism has felt the call of the highest. The genuine leaders of human thought in every country and age have borne witness to the presence of something great, something exalted, something that makes for order, for righteousness. It is this consciousness that sustains men in their battles against chaos and unrighteousness. It is their consciousness that reason ultimately rules the world that gives them strength to keep up their courage in the midst of disappointments. This consciousness is there: latent in all, actual in most. The difficulty comes when we seek to express this consciousness. Our mind is baffled in its struggle to envisage this Reason, Logos, God or whatever we choose to call it, in Its immensity, power and glory. In this incapacity of the human mind lies the root of the desire to personify. Our heart yearns to worship. But we cannot worship an idea, however much we are convinced of its truth, and so we are driven to symbolize, and our religious worship slakes its thirst in the worship of symbols: fire in Zoroastrianism, idols in Hinduism, the cross in Christianity, Mecca in Mohammedanism, not to mention the forgotten creeds of the past. The wise recognize the One under the formalism of a thousand symbols. That is why the language of the mystics is the deepest language of the human heart, and throbs with the same pulse of life. Where they differ is in the different names under which the One presents itself: to the Hindu it is Rama, or Vishnu or Shiva; to the Christian it is Christ; to the Moslem Sufi it is the beloved. The ignorant and the fanatic confound the symbol with the Real and seek to exhaust the richness of the One in some arbitrary symbol of human creation.



But the average theist is not likely to be satisfied with this selfless worship. He wants a God, to Whom he can pray: ask for favors and seek forgiveness. Now it is remarkable that this demand is made only by the lesser minds. The genuine mystics, the genuine adorers of God scorn this demand. They do not ask for favors, they do not grumble against the unkindness of their lot in life. They are content to be the *bhaktas* (devotees) of God; they rejoice in poverty, in adversity; they have a childlike faith in the righteousness of things:

"God's in His Heaven,—

All's right with the world!"

They merely crave for communion with Him, and when they find it, the craving of their soul finds rest.

Thus it is that the demands of the highest philosophy and the highest religion coincide. The God of religion need be nothing but the personified aspect of the One of philosophy. The justification for this personification lies in the finiteness of our intellect: what we cannot adequately conceive we must first personify and then symbolize. Art is not the less intellectual because of its symbolism, and religion gains in worth when its mode of worship finds a rational justification.

At this stage there is every likelihood of a voice of protest coming from the camp of the pure rationalist. "If you can get no tangible reward," he argues, "from your worship and your prayers; if your sins are not forgiven, where is the sense of worshipping? Why waste time in idle prayers? In fact your argument reduces worship and prayers to a mere luxury of the heart: a pageant to delight the senses with the fragrance of incense, the music of hymns, the drama of color. It is a palpable make-believe, a device to hold the masses in leash, a mere show, nay a sham. A philosophy which seeks to rationalize such mummary is doubly guilty: because it is untrue to itself,

and because by a specious rationalization it seeks to perpetuate the tyranny of priests who find their last prop in the ignorance of the masses." I should be the last person to deny that there is considerable justice in this indictment. It has been the universal misfortune of all religions that they have been mutilated and tortured out of shape to suit the second rate intellect and more often the cupidity of an organised priesthood. But the ritual that has been the creation of an interested priesthood—while it has succeeded in capturing the imagination of the masses—has been uniformly repudiated by the true *bhaktas*, for their heart has rebelled against the prostitution of divine love that is the result of vicarious sacrifices and prayers. They believe in the worship of the heart which makes them purer and better men. The real justification of prayers is to be found in the fact that they exert a purifying influence on the mind and contribute to the development of the mind. This is a truth which was always well understood by the Upanishadic psychology, and has recently been well recognised by Western psychologists under the compelling influence of Coué in France. Couéism together with the indubitable instances of telepathy and clairvoyance has irrefutably established the power of the human mind. Through the activity and concentration of mind things have been achieved that are ordinarily impossible and that in ignorant ages were justifiably regarded as miracles, but that in our scientific age can be easily explained as the result of the almost limitless capacity of our mind. The power of auto-suggestion has been shown to be a conqueror of nervous diseases through the commanding influence of the mind, and this logic applies equally to its power over our thoughts.

Thus prayer and worship, when practised with the requisite amount of sincerity and concentration, become the grand instruments of self-culture, and herein lies their fullest psychological and philosophical justification. They are

the means of concentrating our mind on higher things and thereby attuning ourselves to the spirit that pervades the world. To conceive prayer as the means of asking for favors or forgiveness is to misconceive the essential purpose of prayer. According to the law of Karma the past cannot be undone, but sincere repentance is a conquest over the future so far as it makes a repetition of the old sins impossible. Sincere prayer strengthens this repentance and thus purifies the sinner. As has been mentioned above, the true devotees of God do not care to ask for favors: they only want to be one with Him, and to achieve their purpose they become lost in *bhakti*, devotion, prayer. It is immaterial how God is named; it is enough if He is conceived as the Spirit of Righteousness, Asha, Rta, ruling the universe. The very uniformity of mystic experience proves the truth of this, for the Christian attains Him through the worship of Christ, and the Vaishnavite through that of Sri Krishna, and so on in different religions. The immediate object of devotion is—or at least sounds—different, but the ultimate object is just one, howsoever differently He is called.

The need of having some tangible object of worship is at bottom psychological, for the human mind finds it hard to grapple with abstract concepts, and the tendency to personify is one of the most deep-rooted in our nature. The concept of the Universal Reason, *Nous Brahman*, is one that cannot be visualised. And yet to prevent the mind from wandering some object of concentration is needed. The need to personify the Ultimate is pressing and the concept of a personal God is the result. At this stage, what is more natural than to conceive the Supreme in terms of a known hero, who has already distinguished himself as a great warrior or lawgiver or teacher? He becomes the visible embodiment of Godhead; the symbol and the Symbolised are confused, and in historic sequence the worship

of the One takes on different forms agreeable to the genius and the history of different peoples.

The intimate connection which has through the ages subsisted between religion, poetry, music, architecture and painting, has not been accidental. All art is personification, and religion, by a deep-seated need of the mind, tends to be centered in some personified deity. Primitive religion and mythology are the first crude philosophical ventures of the human spirit. It has taken centuries for us to outgrow these mythologies—and yet who can say that we have completely outgrown them even today? But if we have outgrown them at all, the credit of it must go to the patient, clarifying thought of the philosophers and the discoveries of the scientists. With a better philosophy our religion has bettered too, for religion is nothing but personified philosophy. If philosophy has established the supremacy of some one concept, our head is satisfied with it, but our heart in its yearning for worship needs its personification, and in the highest religions God is nothing but this personified aspect of the One of philosophy.

The main threads of our argument may perhaps be as well brought together. The task of philosophy is to comprehend the Ultimate Reality, a task which is essentially intellectual in character. The ordinary traditional religion with its emphasis on faith and on revelation is not competent to replace philosophy and so the two are incompatible. But philosophy in its intellectualism is not satisfying to the heart, unless it can develop a religion which is not inimical to the supreme dictates of reason. Such a religion is to be found in personifying the Ultimate of philosophy, and in fact that is what every great religion consciously or unconsciously has done, and that is why it has been able to hold its place in spite of its crude dogmatisms. I do not mean to say that the object of religion is a fiction, as Sankara conceives *Isvara* to be a mere part of maya. The

personification is justifiable from the standpoint of the need of worship and prayer, which are the grand instruments of self-culture, as recent psychology has shown. In the last resort the God of religion and the Ultimate of philosophy are identical. The former is an expression more suited to the aesthetic and the emotional aspects of our nature, while the latter expression is more suited to the intellectual side of our nature. Both are justified, because in an individual human being all the sides of his nature are not equally developed, and each man must have the freedom to envisage the Ultimate Reality in the way best suited to him. Religion and philosophy are but two modes of apprehending the ultimate nature of the world. God and the Absolute of *Brahman* are but two names to designate two aspects of one and the same reality.

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## CURRENT REALISM IN GREAT BRITAIN AND UNITED STATES

THAT the first, genial period of the realistic movement in the English-speaking countries is over will, I believe, be granted me by those in touch with the literature. The possible lines of interpretation have been carefully canvassed and the various positions have been formulated with a fair degree of precision and definiteness. Thus we are able to contrast English neo-realism with American neo-realism and both with critical realism. It would appear to be the case that the preliminary exploration and search for possibilities has been carried through and that we are about to enter upon the stage in which there will be a struggle for survival among these suggested possibilities, a struggle which will involve clarification and modification, no doubt, but also the rejection of certain theses and analyses and the acceptance of others. It is in this fashion that philosophy slowly grows.

This realistic movement is likely to seem tremendously important to the thinker who has participated in it. He sees it as a right-about-face in Anglo-American philosophy. Not only was it a protest against the perspective and assumptions of traditional idealism; it was also an effort to build afresh upon the foundations of the sciences. It stood for an ingenious and persistent attempt to study perception with its associated meanings and beliefs and to pass thence to the higher reaches of knowing.

I have suggested that the first period of the realistic movement is over. There are many signs that this is true. First, no novel realistic doctrine has recently been suggested—a fact which is not surprising in view of the daring of the inaugurators of the movement who went to extremes which challenged probability; and, second, the attention of philosophy is already swinging to cosmology, as is illustrated by the increasing interest in the theory of nature and in the solution of the mind-body problem along monistic lines. It is highly probable that the struggle for existence among realistic doctrines will be affected by the results of this new development which will cast light back upon epistemology.

Assuming, then, that the stage of the formulation of realistic hypotheses is in the main past, it will be my endeavor to give a survey of them, linking them with the names with which they should be associated, and to add to this survey some measure of criticism, evaluation and suggestion. Though I myself represent a specific type of realism, I have always tried to be open-minded and to regard critically my own position as well as that of others, holding as my ideal that objectivity and tentativeness which characterizes science in its treatment of hypotheses.

## I

It is natural to divide current realistic doctrines in the English-speaking world in some measure along national lines because, when all is said, those who live together and know each other personally influence each other most strongly. Philosophy is international and yet in its growth bears the marks of its social environment. If a certain thinker makes an analysis, he is apt to be followed therein by those who come directly under his influence. There is in this the unavoidable effect of personal prestige. Thus we shall see that the English realists have usually



had a somewhat different notion of mind and mental acts than have Americans. To what does this go back? Perhaps to the influence of G. E. Moore and Russell, and perhaps from them to the work of Meinong and Brentano? In this matter, the American tradition has followed James, Hume, Mach and, perhaps, the empirical psychological and biological outlook.

There is, in short, a characteristic convergence in each country of international and intranational influences. The English thinker will not be surprised at this fact if he will bear in mind the differences between Oxford and Cambridge in these matters. Of course, we must not oversimplify the situation for there are exceptions to test the rule. Thus Mr. Russell has both influenced American thought and been in turn influenced by it. His book, *The Analysis of Mind*, illustrates this interaction very well. But, in Mr. Broad, we cannot fail to note the effects of inbreeding.

We must not forget that realism is, after all, a very old tradition in philosophy, far older than the idealism which submerged it during the latter half of the nineteenth century. This is not the place to investigate the reasons for this temporary submergence, and I shall content myself with pointing out the fact. Cartesianism passed into Lockian representative realism and thence into sensationism. Was this a degeneration, or an advance, or something of both? In any case, English philosophy lost its vitality and fell a prey to Kant and Hegel. Perhaps, there was much in the *Zeitgeist* of romanticism and in the struggle with the inordinate claims of a mechanistic science of a reductive type to reenforce this turn which philosophy took and to give idealism a strength which is already seeming curious to the present generation.

But such an historical study is not my present task. The plain fact seems that idealism was not equal to its task. It did not face up to the facts discovered by the

sciences, and seemed to consider itself an escape from their pressure. Dissatisfaction was certain to manifest itself.

This dissatisfaction expressed itself at almost the same moment in personal idealism of a pluralistic type, in pragmatism, and in realism. The spell was broken, and a new wave of thought swept over men's minds. Thinkers who were not by nature disciples came to philosophy with the problems of the sciences in their minds and with something of its logical technique controlling their methods of approach. They felt the need of a basic reformulation, of a fresh start. It was their task to analyze, reflect, and analyze again, yet with always some attention for the larger setting. Until the biographies of this generation are written, we shall not know the full forces which directed philosophy along realistic lines; but some of us can make a shrewd guess as to their nature. We must not, of course, make the mistake of assuming that too great a homogeneity of outlook existed. The influence of a plastic naturalism is evident in some; in others, we find an almost Platonic note.

So much for the setting of realism. We must now pass to our promised survey of actual positions. And I think it will be best to begin with the English phase of the movement. While the swing toward realism was practically contemporaneous on the two sides of the Atlantic, the formulation of it in England was more precise and clear-cut. American thought was more experimental and varied. Another reason for beginning with the English development is the recognition accorded to Mr. Russell's work in mathematical logic by the American new realists. Their theory of analysis seems to have been built up largely upon it as a foundation.

## II

Mr. G. E. Moore fired what is usually considered the opening gun of the attack upon idealism in his essay entitled, "The Refutation of Idealism." This was published in *Mind* in 1903 and has been reprinted with nine other essays of his in a book called *Philosophical Essays*, dated 1922. Mr. Moore, who is now professor of mental philosophy in the University of Cambridge, has not been a prolific writer but has been very influential. He owes this influence to his painstaking analysis of problems, his refusal to be satisfied with the superficial. Whether he has shown as much power in construction is doubtful. But he might well reply to a critic that he was persuaded that the first task was that of analysis since the foundation had first of all to be laid.

The distinction upon which Mr. Moore puts so much stress is characteristic of this English type of realism. It is that between the mental act of awareness and the object of that act. He speaks of this mental act as a sensation because he has in mind its difference from thought of a more developed kind. He argues that the mistake of the idealist has been the assumption that what we are aware of is the content of our sensations, an inseparable aspect of them. But such a position, he maintains, involves a denial that we can be aware of anything. The idealist is logically involved in solipsism. In contrast, Moore stresses the basic importance of a relation which he calls "awareness of anything". Every experience includes this factor. It is that which justifies us in calling any fact mental. This doctrine of a transparent cognitive relation which is mental but is not itself the object of a mental act stands out as a thesis which had tremendous influence upon other English realists. It gave a simple structure to their analysis of cognition. The act of awareness is mental, the ob-

ject is not necessarily so; and the object is unmodified by this act of apprehension.

Those who wish to read a characteristic exposition of his views at the present time should read his statement of them in the *Second Series of Contemporary British Philosophy*, which is entitled, *A Defense of Common Sense*.

Whether this distinction between act and object was suggested by Brentano and Meinong or was worked out by himself I do not know. His development of it is, however, peculiar to himself and had its influence upon Alexander, Broad, Laird and Russell.

Bertrand Russell has probably been the most conspicuous figure of the English movement. He owes his prominence to various factors among which we may mention his pioneer work in the fusion of mathematics and logic. It would, I think, be generally granted that his contributions to symbolic logic were marked by careful scholarship and ripe reflection. We would select for special mention *Principles of Mathematics*, *Principia Mathematica* (with A. N. Whitehead), and *Our Knowledge of the External World*. In the domain of theory of knowledge, his little book, *The Problems of Philosophy*, helped to direct attention to a position very similar to Moore's. Mr. Russell has been a prolific writer, seemingly able to touch upon almost every subject and gifted with a strikingly clear style. His very virtuosity may have robbed us of systematic works comparable to his *Principles of Mathematics*. His latest definitely philosophical contribution is his *Analysis of Mind*. In it he shows a swing in the direction of the American approach in so far as it took its departure from William James's famous essay, *Does Consciousness Exist?* The psychological position called behaviorism has also exerted influence upon him. In our summary discussion of Russell it will be best to confine our attention to his logic and to his view of mind.

In his contribution to the *First Series of Contemporary British Philosophy*, Russell describes his philosophy as logical atomism, preferring this description to that of realism. He has always stressed the importance of relations for logic and for our thought of reality. The tendency to monism in the past is, he believes, due in no small measure to the emphasis upon the subject-attribute structure. Logical atomism means distinction of *type* in facts and propositions. Terms must not be confused with relations. They are distinct and irreducible. Logic is the study of recurrent forms. The influence of mathematics is shown in his adoption of the expression, "propositional function", for the logical form which contains variables which may be replaced by specific terms. "X is mortal" is a favorite instance of such a propositional function. In place of *x* we may put Socrates or Wilson or John Smith.

It is his contention that a large number of the paradoxes which afflicted philosophy were due to bad logic and bad mathematics. On the whole, he seems to have established this contention, though it is probable that the last word has not been said in mathematical theory upon infinite numbers and upon continuity. This incursion of mathematical methods into philosophy has been most stimulating and useful.

In his theory of knowledge, Russell has moved from a position akin to that of Brentano and Meinong to one which approaches American neo-realism. He writes as follows: "My own belief—for which the reasons will appear in subsequent lectures—is that James is right in rejecting consciousness as an entity, and that the American realists are partly right, though not wholly, in considering that both mind and matter are composed of a neutral-stuff which, in isolation, is neither mental nor material. I should admit this view as regards sensations: what is heard or seen belongs equally to psychology and to physics.

But I should say that images belong only to the mental world, while those occurrences (if any) which do not form the part of any 'experience' belong to only the physical world."<sup>1</sup> It should be noted that this is a structural view of mind and consciousness.

S. Alexander deserves space in such a survey as ours because he was one of the first to work out realism in a systematic way and to connect it with cosmology. His two-volume work, *Space, Time and Deity*, has much in it that is admirable. We must, however, confine ourselves to the epistemological side of his speculation.

Alexander developed his realism gradually, and we have articles of his in the *Proceedings* of the Aristotelian Society and in *Mind* which reveal the line of his advance. It is clear that he begins by rejecting the possibility of a new type of representative realism. His statements to this effect are explicit. He finds himself in harmony, then, with Moore and with other English realists in the theory that the object of awareness is non-mental and that awareness is a contentless act. Even images are in some sense physical. It would seem that this theory leaves little to psychology. And it is not surprising to find that Alexander is favorable to behaviorism. A distinction of his which has attracted attention is that between enjoyment and contemplation. This distinction corresponds to the difference between the mental act and its object. The object is contemplated; the act is enjoyed. So long as we are concerned with the apparent structure of a simple act of cognition, this contrast seems a natural one. But it may be questioned whether it is any more than a functional division. We have already noted that Russell and the American neo-realists, following James, are inclined to question even its functional existence. In this they are probably going

<sup>1</sup>Russell, *The Analysis of Mind*, p. 25.

too far. But we should note that Alexander makes of it an opposition of stuff.

Having determined his epistemology and given it an empirical, immediate content, Alexander proceeded to disclose its cosmic context. Under the influence of relativity notions, he makes space-time the ultimate reality. It is the stuff out of which all particular things are made; even universals find their place in it as a spatio-temporal pattern. We now meet with the theory of emergence which postulates the rise of new qualities in an evolutionary way. Thus mind is a term for the mental acts intrinsic to the brain. So far as possible, we find Alexander seeking to merge knowing into the general relation of compresence, which characterizes all things in the world. Yet he recognizes the special nature of awareness and puts it high up in the scale of evolution.

Alexander is a systematic, ingenious and daring thinker. He has exercised marked influence upon the work of such important thinkers as Whitehead and Lloyd Morgan.

There are many other philosophers in England whose epistemological work deserves mention. Percy Nunn is one of the pioneers in the field. His little book, entitled *The Aim and Achievements of Scientific Method*, has been influential. John Laird is a defender of the essentials of common sense. His position savors very strongly of the traditional Scottish school. His *Problems of Self* is probably his best work. As regards theory of knowledge, he follows fairly closely in the footsteps of Moore and Alexander. This is seen in his *Study in Realism*, which is a clear statement and defence of the essentials of neo-realism. Dawes Hicks is a keen critic much of whose work has been done in articles and reviews. He emphasizes the discriminative capacity of the mind. L. A. Reid has developed a position very close to that of American critical realism. His *Knowledge and Truth* is in many ways an



admirable piece of reasoning. C. D. Broad of Cambridge is a realistic thinker who has remarkable balance. He has shown himself able to follow the recent developments of mathematical physics and to interpret them to the general reader. In this ability he resembles Russell. In fact, no one could fail to place him in the group associated with Cambridge. His epistemology represents in many ways a return to Locke but, of course, with a difference. He accepts the distinction between primary and secondary qualities, thus breaking with neo-realism, and adds to the primary qualities such a factor as energy. In accordance with the English tradition, he makes much of the sense-data which are given in perception. These data seem to be thought of by him, not as discriminations but rather as definite entities which are non-mental, though not physical. He seems to continue to hold a restricted idea of mind. Sense-data are a *tertium quid* between mind and physical object. His chief works are *Perception, Physics and Reality*, *Scientific Thought*, and *The Mind and its Place in Nature*.

### III

In the United States the realistic movement began in a broad and tentative way. James, Santayana and Woodbridge were among the first on the field. Shortly thereafter, appeared most of those who have since made contributions. Gradually a division between the "new realists" and the "critical realists" became evident and was sharpened by means of the cooperative volumes which the two groups published. It will be most convenient to consider the doctrines as a whole and to mention the writings of the particular thinkers incidentally.

James and Woodbridge sought to interpret mind realistically as a kind of relation between objects existent in their own right. It was an attempted return to naive

realism combined with an attack upon the traditional realm of the subjective. In fact, the subjective has been in bad repute with American thinkers as a whole. James's doctrine was called by him radical empiricism and assumed that the raw stuff of reality was immediately given and that the difference between the physical and the psychical was merely one of relationship or perspective. We have already noticed that Russell has come under the spell of this theory.

Meanwhile, a younger group were working away at a systematic analysis of knowledge from the realistic standpoint. Distinctly intellectualistic in their approach, they laid emphasis upon symbolic logic and upon what Russell has called logical atomism. Their chief doctrine was similar to that of the English movement, *viz.*,—that the object itself is given in the field of experience. In other words, they, also, rejected the possibility of making a fresh start along the lines of a mediate, or representative, type of realism. It has become customary to call their position epistemological monism to signalize this literal presence of the object. Thus this book which I perceive is an actual external object in no sense dependent upon my perception for its existence. Its being perceived is just an external relation into which it has temporarily entered. This doctrine demanded the development of the logic of relations and it was for this reason that these thinkers gave so much time to symbolic logic, believing, as they did, that the logic of analysis gave their epistemology its foundation. It may be that they were deceived in this belief, but it cannot be denied that it helped to bring about that efflorescence of mathematical logic so characteristic of Harvard, as it is of Cambridge.

The new realists drifted in the direction of behaviorism by denying the peculiar mental act so conspicuous in the English theory. Mind is increasingly conceived in

terms of the response of the organism. Such a development led in the direction of the complete denial of consciousness as peculiarly private and subjective. The intra-organic is simply harder to get at and to make an object of knowledge.

One other point should be noted. Like all theories of immediate realism, the new realism holds that the very stuff of reality is given in the field of experience. And this stuff is analyzable into particulars, universals and spatio-temporal relations. There is the minimum element of skepticism and agnosticism in such an outlook. This perspective is also indicated by their dislike of the category of substance and their adoption of the mathematical term function. In this they agree with Russell who rejects both substance and the non-legal conception of causality.

The chief exponents of the new realism in the United States are Holt, Marvin, Montague, Perry, Pitkin, and Spaulding. Besides the cooperative work, to which they contributed in common, called *The New Realism*, we may mention Holt's *Concept of Consciousness*, Montague's *The Ways of Knowing*, Spaulding's *The New Rationalism*, and Perry's *General Theory of Value*.

I presume that it would be improper not to mention the work of A. N. Whitehead, who now teaches at Harvard. Yet his outlook is hard to classify for it combines cosmology with epistemology in a tantalizing way. Undoubtedly influenced by Alexander and Russell, he yet quickly made evident his own insights. Like all who have come under the sway of relativity views, he substitutes the category of events for that of substance. Does this simply mean an activating of the notion of substance? It is difficult to say. On the whole, Whitehead falls in line with English neo-realism. Take this statement from *Science and the Modern World*: "This creed is that the actual elements perceived by our senses are *in themselves* the ele-

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ments of a common world; and that this world is a complex of things, including our acts of cognition, but transcending them." Whitehead has been of late a prolific writer, and we may mention his *Concept of Nature*, *Principle of Relativity*, and *Principles of Natural Knowledge*. His books are not easy reading because he develops his own vocabulary as he goes along. Many find a great stimulus in his work and lectures. I imagine his final influence will be greater in cosmology than in epistemology.

Critical realism arose almost contemporaneously with neo-realism, but it systematized itself later and partly in opposition to neo-realism's doctrines. It is a strict form of realism in that it teaches that we know objects which exist external to the fact of knowing and independent of it. But the division comes with the question of the actual presence of the objects themselves in the field of experience. Does knowing involve this? Do the facts permit such a belief? After carefully considering the whole situation, the advocates of critical realism decided that epistemological dualism was more plausible than epistemological monism. We make things objects, we mean, select, affirm them in a specific and definite way; and yet these objects do not literally enter our consciousness. Rather are they interpreted in terms of the meanings and characters which stand out in our perception and in our thought of them.

Perhaps the best way to get clearly in mind the difference between the new realism and critical realism is to note the divergent theory of consciousness. Critical realism thinks of consciousness as a function of the organism in its interpretative response to objects and regards it as an intraorganic realm of a peculiar kind, while the new realism thinks of consciousness as a term for a selection of entities. In other words, critical realism falls more in line with psychological tradition but adds a keener sense of the organic activities which find expression in the field of

consciousness and of the structure, distinctions and references which characterize such a domain. We may say that it puts an extrospective consciousness, engaged in knowing objects, in place of an introspective consciousness, such as traditional psychology has stressed in line with its purely analytic efforts.

This divergence in their theory of consciousness finds expression in their views of the nature of knowing. While the new realist holds that knowing is the givenness of the object, its literal presence to inspection, the critical realist regards knowing more as an interpreting of a selected and meant object by means of characters discriminated in the field of consciousness. Such knowing is a complicated affair with its meanings and its categories which have gradually been developed in the human mind in its continued response to things.

It may be well to contrast critical realism with English neo-realism also. One important difference lies in the greater scope which critical realism gives to the mental act. While neo-realism has traditionally limited the mental act to a peculiar, and almost transparent, activity of something thought of as mental in a substantial, cosmological way, critical realism does not introduce such problems at the beginning. It takes the mental act as an empirical affair and gives it the content and structure it apparently has. In other words, the mental act seems to the critical realist to be a complex process of interpretation rather than a simple awareness. This difference leads him to take the data of perception as discriminations within the field of consciousness in the art of knowing rather than as entities of a non-mental sort.

It is essential that the interpretation of knowing characteristic of critical realism be sharply distinguished from that of the older (and traditional) representative realism. It will be admitted, I think, that it was the inadequacies

of this that led to both idealism and its opponent, the new realism. Remove these inadequacies and the *raison d'être* of both of these positions is at the same time destroyed. This has at least been one of the convictions of the critical realist.

On the whole, representative realism has been tinged with subjectivism and has tended to assume that we know our ideas first and that it is by a sort of inference that we pass to the extra-mental object. Now this approach led to insuperable difficulties. It was impossible to justify such an inference as a purely logical matter, and it was equally impossible to verify the similarity between ideas as primary objects of thought and external things not given. Having carefully studied the actual situation in knowing, the critical realist stresses the direction of the complex act of knowing. He holds that a sense of an object is a specific ingredient in the act of cognition and that this sense of an object goes with the interpretation of the characteristics of the object. In other words, knowing has a definite structure and content and is by no means reducible to the two operations set up by Locke. It is the external physical thing which we from the first are engaged in interpreting, and this interpreting is a complex affair revealed in consciousness. We have pointed out the differences between critical realism and the new realism; let us now turn to the similarities.

For both, mind is conceived organically in terms of responses of the higher nervous centres. Thus the setting is psycho-biological. For both, the object is independent of the act of perceiving. There is a strong tone of naturalism in the outlook of both. And yet even here come the differences again. The new realism swings in the direction of extreme behaviorism and is skeptical of an intraorganic, subjective realm, while the critical realist accepts such a realm and considers it natural and intrinsic to the total

organic response. This choice in psychology reflects a choice in epistemology. If objects are given and so constitute consciousness, there is no need of a subjective microcosm. If, however, objects are not given but are interpreted in terms of given characters, then such a peculiar, intraorganic domain is needed. I do not see, therefore, how psychology can remain indifferent to epistemological disputes.

A similar comparison between critical realism and English neo-realism may be of value. It will be remembered that, for the English neo-realist, the mental act is simple and transparent—even for Alexander it is not much more than an enjoyed sense of direction. We may say that American neo-realism sought to do without even this mental act while keeping the direct givenness of the object, while critical realism enlarged the mental act to take in concrete content and to make of it a structured process of interpretation of an object meant and selected but not literally given. Since the basic theory of knowledge is so different in the latter case, I suppose that the natural line of evolution of English neo-realism is in the direction of the new realism. It would appear that both Alexander and Russell are turning toward it. On the other hand, it would seem equally natural for a position like Broad's to swing toward critical realism.

It would be unfair to the reader who wishes to understand the situation in realistic epistemology to-day not to refer to the differences among critical realists themselves.

There seem to be two trends which reflect a difference in cosmology itself. On the whole, Santayana, Drake and Strong maintain that the datum is an essence which cannot be regarded as a psychological existent and must therefore be considered a logical universal or subsistent. In adequate knowing, this essence is identical with the essence embodied in the object. There is no doubt that this group



has put its finger upon a very significant question for critical realism. In knowing, we are trying to interpret the object and an accepted interpretation is supposed by us to reveal the object somehow and in some measure. This claim seems to me the minimum and irreducible feature of knowing. Now the other members of the group are quite aware of the demands of knowing, but they are not persuaded that it involves the postulation of essences of this semi-Platonic sort. Let us examine the complex act of knowing and see whether we can give it a psychological interpretation which, at the same time, does justice to its logical aspect.

A complex act of knowing seems to me a configuration, or *Gestalt*, with specific characteristics. It is an achievement involving meanings and distinctions and is clearly a high mental level. At this level, the category of thinghood is functioning with its sense of objects and their characteristics. Note that it is within this kind of structure that we as conscious and knowing creatures work. We discriminate characters and at the same time think of them as characteristics of the object we are seeking to interpret. The point to grasp is this, that, in knowing, we assert a cognitional identity between the predicates which we hold before our minds and the characteristics of the independent object. We believe that we are cognitively grasping the structure and behavior of the object. Or, to put it another way, we believe that the structure and behavior of objects are revealed to us by these predicates. Does such a revelation or cognitional grasping involve an identity of essence? Does it imply that there is a something which is identically present in the mind and in the object? Here is the point in dispute. I, for one, cannot see that it does involve this. Moreover, it appears to me that predicates are distinctions in consciousness.

Ultimately, I suppose, the dispute involves a theory

of consciousness itself. Is consciousness a complex of mind-stuff? Is it a flux of essences. Or is it an emergent and configured stream of *quales* within which knowing takes place in an empirical way and in which we as conscious selves are? Drake appears to me to hold the first view, Santayana the second, and several of us the third view. I am inclined to think that epistemology has gone as far as it can without a definite cosmology and ontology. The question in my own mind is this, Which view fits in most aptly with an outlook of the type of emergent naturalism? It is clear that the nature and status of universals is also involved in this division within critical realism. Can universals be given a purely psychological interpretation in terms of discrimination and symbolism? Or must we assume genuine subsistents which have a non-psychological status? It is to the first position that I myself give allegiance, while the other wing of critical realism is evidently more in line with the traditions of Plato and Aristotle.

Those who have had the patience to follow my analysis of the various epistemological theories of a realistic perspective which the last thirty years have brought forth will, I believe, acknowledge the painstaking character of this development. All relevant questions have been raised and discussed. There has been no flinching from difficulties, no taking refuge in broad generalities. It is for this reason that I am persuaded that genuine advance has been made and that, with an equal advance in cosmology, something analogous to science in its finality will be produced. The realist feels that he is on the right track and it is his hope that, from the struggle which is going on between different positions, something definite will crystallize out.

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## THE REALITY OF TIME AND THE AUTONOMY OF HISTORY

### I

PLANCK'S discovery that even the energy emitted by the discrete electrons is also discrete, well entitles him to the sweeping dictum, that "Whatever can be measured is real."<sup>1</sup> The essence of the method of physics is *to measure*, and the successive discovery of more and more minute units of measurement (atoms, molecules, electrons, quanta) are the milestones of physical progress. Sir Oliver Lodge well exclaimed that soon all discontinuity will vanish and that all experience will resolve itself into an atomic "steeple chase," governed by the laws of mechanics.

With what confidence may we look forward to such an outcome? The major *point de resistance* is not hard to find. There is the irreducible fact that *the laws of science too have a history*. The cold and austere formulae of the geometer tell us nothing of the fortuity, the continuity of endeavor and hope which was their price. What is worse, the present laws of science do not reveal the laws which preceded them: only memory or written record can reveal these. Will analysis show that the *drama* and *development* which appears in the history of science is only an appearance, that here as elsewhere there is only combination and recombination of the given?

<sup>1</sup>Schlicht, Moritz, *Space and Time in Contemporary Physics*, 1920, Introduction.

The answer of the intellectualists, whether in science or in philosophy, is to the effect that all experience is subject to exhaustive conceptual and quantitative analysis. Each of these modes of comprehension assumes a typical view of the constitution of the universe: the philosopher assumes a reality governed by absolute logical necessity, the physicist assumes a universal mechanic. In both cases it is implied that *deeds*, recorded by historian or biographer, are not in a special class: they are, above all, not unique *ways of understanding* but are *objects of understanding*. But we touch here upon an enigma which has dogged the steps of both philosophy and science since their first inception. We posit a universal mathematic in the interests of clarity, only to find that this device sheds light on all things by the dubious device of concealing all the darkness within itself. A fundamental instance of this is the method of discontinuous analysis by means of which we represent spaces and lines as configurations of points. So far as mathematical clarity is concerned, nothing is wanting. Only, the puzzle as to how such points could constitute real space, or how such space could be traversed, remains an enigma. Now, this method of analysis of space into points was purchased at the price of Zeno's paradoxes, which have been handed down in history like a "bad debt"; and even now Bertrand Russell, Whitehead, and a host of others are seeking to discharge that debt. But meanwhile, do we suppose for an instant that there are no real spaces or real movements over them? Not at all: thanks to the life of *deeds*, the experience of traversing paths is already a source of knowing. Then, can we generalize this, and maintain that all immediate experience and all experience which history and biography record in its immediacy (so far as this is possible) constitute a *mode of understanding* entirely distinct from that understanding called scientific, which considers, not bare experience, but

its frequencies? Droysen indeed raised the basic issue regarding history (as F. M. Fling avers<sup>2</sup>) when he asked, "Is there, then, never more than one way, one method of knowledge?" The first point which I wish to urge is this: that history enjoys a certain priority over science: we crowd history out of nature only to crowd it into the history of science. Poincaré well exclaimed that we do not solve nature's problems, we only transfer them to the textbooks! Thus, the notion of dimensionless points is employed in an attempt to resolve the perceptual world into number, and thence, into a formula. But, it turns out that when we press the principle of simplification too hard, problems multiply, so that the analysis of space into points, far from ridding us of history, leaves us with a *history of opinions*. The only "ultimate knowledge" we attain seems to be the fact that we are disagreed about it. History at least seems to perform one-half of the task of knowing, because it always succeeds in finding past solutions wrong or incomplete. Surely, to "question answers" is just as useful a function as "answering questions".

The more crucial question is, "In what sense could ungeneralized historical events constitute a unique form or source of understanding? Certainly, the events of history and biography *are* subject to a *posteriori* generalization—such generalization constitutes political and social science. But this would leave the historian a provider of the *rare materials* of knowledge, not of knowledge as such. We may suppose, with Rickert,<sup>3</sup> Fling,<sup>4</sup> and others, that the events of history contain a remainder which generalization misses. There are two sorts of such remainders: (a) remainders which are too *infrequent* to be generalized, and (b) there may be something "remaining" about even the instances and their aspects which have been completely

<sup>2</sup>Fling, F. M., "Historical Synthesis", *Am. Hist. Rev.*, IX, p. 3.

<sup>3</sup>Rickert, *Zur Lehre von der Definition*, 1902.

<sup>4</sup>Fling, F. M., *op. cit.*

generalized. The scientist may declare of the first type, (a), that, though they are at present too infrequent to be generalized, *time* will make generalization possible by multiplying the frequencies. This will not avail, however, because *time* will also bring new remainders (novelties). Time, which alone can save generalization, is also the agency which defeats it. But, even if there were no "remainders" in the sense of ungeneralized instances, we might still insure unique data for history by urging, as Aristotle<sup>5</sup> did, that history is concerned with the *particular*, poetry with the *universal*. Eduard Spranger<sup>6</sup> argued that only by coming into touch with life in its concrete complexity, can we enter into the "fullness of living." Though one might maintain the autonomy of history on the first ground (a), in this paper, I urge its autonomy in the more profound sense suggested by Spranger's words.

Poincaré, always illuminating, is especially convincing on this point. One basic method of exact science consists in counting. But, no matter how far we count, we never count more than a finite number. Yet, says Poincaré, we believe that our power has no limit, and that we can count indefinitely. What taught us this? We cannot say, "past experience". The belief that an absolute mechanism lies concealed in nature is in a similar difficulty. To be sure, past experience shows that we ever find "more and more" mechanism in nature. This fact leads, however, not to one inference, but to two possible ones. There is, first, the conclusion drawn by most thinkers, that if we find "more and more" mechanism, we will inevitably discover *all*. But this expectation is justified only if there is an absolute mechanism, i. e., a finite one which we may some day exhaust. But if *mechanism* is an *ideal* like goodness and beauty, (i. e. an infinite) we might just as sensibly expect

<sup>5</sup>Aristotle, *Poetics*, IX, 3.

<sup>6</sup>Spranger, Eduard, *Die Grundlagen der Geschichtswissenschaft*, Berlin, 1905, pp. 143-145. Cf. Burr, *Am. Hist. Rev.*, XXII, p. 268.

to empty an infinite ocean by finite decrements. The difference between the finite and the infinite may be a difference in *kind*, not a difference in *degree*. Russell well exclaims that we required the discovery of the electron and the quantum to teach science how far we are from omniscience! That the notion of an *absolute mechanism* is an *ideal* is apparent from the following simple consideration: To demonstrate "absolutely" mechanical laws for massive bodies (as Newton's law of gravity does for the planets) does not establish it for the parts (atoms and molecules, etc.) which compose them. And, to prove an absolute mechanism for atoms, does not prove it for electrons which compose them. We are here in the predicament of an *infinite regress*, whose goal is the particle so small that it has no area at all, i. e., the point. But whether the dimensionless point may be attained by dividing and subdividing areas is none other than the "bad debt" about which we have only opinions, famed for the fact that that history is literally strewn with their *variety*: an unhappy predicament for a theory to get into which sets out to attain simplicity.

We wish to prove that there are truths which are independent, not of the fact of experience, but *independent of the amount* of it.<sup>7</sup> There are truths which repetition destroys rather than saves. Such, for instance, are the facts of memory<sup>8</sup> with its live atmosphere of drama and flowing time. Consider your knowledge of the alphabet. We may repeat it automatically, but in vain do we hope to make this automatism of repeating the alphabet yield the individual and laborious trials of our childhood when we "learned" it. This verbal habit, like all habits, has within it no record of its history—repetition tends to destroy the historical datum. Historical understanding of the genesis

<sup>7</sup>Driesch, Hans, *Science and Philosophy of the Organism*, p. 6.

<sup>8</sup>Bergson's familiar argument.



of a thing can be attained only by securing the literal record of the genesis.

Then, when knowledge reaches "completion" will history or exact science have the "last say"? I believe that both will have their last say; that then, as now, historians may write the history of science, but that this "say" must become "penultimate" when sociology generalizes that history. This amounts to the statement that the time when knowledge reaches completion is a myth and self-contradiction. It is the one mother of fallacies which underlies all of the attempts to resolve history into exact science or exact science into history.

## II

### *The Omnipresence of History in Nature*

We may select time as the reality which is peculiarly resistant to the attempts to reduce nature to a mechanic or to a logic. As science is perfected, time vanishes gradually to insignificance. If we can predict the future path of a planet, it is as though it had already happened. Time ceases to be real because *it cannot make a difference*. Yet, the notion of perfect prediction is self-contradictory. If we could forecast tomorrow's experiences in their utter fullness, then tomorrow would be undistinguishable from the present, and *prediction* loses its meaning. When science regards time as insignificant to the statement that "two plus two equals four", it only means that the truth of the formula is not dependent on the time it takes to utter it. That it takes time to utter it is a biological fact: can it also be resolved into a mechanical one? I wish to establish the absolute dichotomy which I believe to exist between the historical and the mechanical point of view by showing that time is an ultimate fact which mechanical analysis cannot envisage. In support of this, I call attention to the following considerations:

Can physics envisage time? It seeks to do so by identifying time as a rate of motion, as a rate of change. This is supposed to put time into the objective realm of "observables". Now, if time is identified with the mechanical movements of a clock, then whatever generalizations we can make regarding past correspondences with the clock's movements, may be expected in the future also. Thus, that which the unlearned call the "contingent" future, now becomes only our ignorance of the past. Yet it can be shown that in carrying through this device, the mechanist overtly employs time in the very *a priori* sense which he sets out to deny—that in looking to the future to supply a deficiency in his present mechanical generalizations, he is tacitly assuming that time insures the emergence of the unforeseen. This is what Xenopol meant<sup>9</sup> in declaring that the logic of repetition must be supplemented by the logic of succession. Let us see if we are not logically led to this result in considering the meaning of clock time.

The apparent movement of the sun was the first clock, and the successive periods of its return form the convenient units of days. Then, clocks are invented, and made to synchronize with the movements of the sun. This accomplished, time is reduced to a *rate of change*. But this is far from sufficient for mathematical purposes. Exact science requires (a) time which consists of discontinuous units, (b) that these units be equal to each other, and (c) that repetition of the same time be possible. To achieve this, we divide the dial of the clock into twelve divisions, and assume that these distances measure equal lapses of time. But, note, that we are already beyond the notion of *time as a rate of motion*. For, the time which we introduce into our formula consists only of the sums of *arrivals* at the divisions of our scale. Now, time is always "arriving"—even if time were identical with uniform movement, the

<sup>9</sup>Xenopol, *Revue de Synthèse Historique*, p. 292. Cf. Fling, *op. cit.*, p. 9.

time which we live lies between the intervals of the clock's dial, which are mathematical lines, requiring no time for the clock's hand to negotiate them. Consider the vast discrepancy between this time and time as we actually experience it. Consider an audience waiting for a beloved play to begin.

This lived time does not consist of a juxtaposition of equal instants, but is continuous, one movement melting imperceptibly into the movement that follows. As we live time, it too has its divisions, but these divisions are not marks on a scale, but are crises, they are "psychological moments" freighted with historical and biographical significance with which the divisions of the clock's scale have nothing to do. In our experience of time, it is the time of waiting which is the most real—the time between the scale divisions. While waiting for a play to begin the time may appear long to the audience, but the placid clock on the wall remains unaffected. Then, why is the clock's time more real than lived time? Only because we posit, by an act of faith, the assumption that *the unchanging is the real*. Perhaps the truth is that *the unchanging is only the useful*, that we accept the clock's time because it enables us to make *appointments*, that is, to make biography or history. To the intellect (witness Planck's dictum) the immediate experience of time is "nothing" because it cannot be measured. But to history, this constitutes rather the reality of time.

We have a similar situation with regard to space. To exact science, pure space is the essence of nothingness. To the will, empty space is real just because it separates us from something, and must be traversed. But, only let this space be measured in unit distances, and science willingly acknowledges its "reality"! Consider a wooded hill which lies before us. Is this space unreal because we do not know the number of miles to its summit? On the contrary, to

our practical sense, counting has little to do with the reality of this space. The very trouble with the line "composed of points" is that it permits counting, but nothing else. It makes no difference whether we say this hill is "one mile" or "320 rods"—number does not make the difference between the rod and the mile, it only labels this difference. The space we traverse is *historical*, the space we count is *mathematical*. Between these two some cryptic connection exists, which is not dispelled by calling it "cryptic", and by "postulating" that the clock's time is the "real" time.

The same argument applies *pari passu* to events. To live events is one thing, to measure them in units is another. Both of these constitute the "truth" about time, but this truth has two ingredients, mathematical and historical. Aristotle distinguished between the "measuring time" (of the clock) and the "measured time". The famous Tristram Shandy paradox will illustrate what we mean.<sup>10</sup> Tristram Shandy was a biographer who employed two years to record the events of the first two days of his life. Russell maintains that if we assume the infinity of time, there is not a day in this man's life but that "some day" will be accounted for. It is worth noting that science vanquishes the difficulties which time raises by assuming the infinity of time. Time indeed loses its sting were there an infinity of time in which to repair mistakes and incompletions. Just so the ether of science is posited as being "everywhere", which leads to the predicament that it can be found "nowhere"! But, as regards "real" time, it is always limited. The logic of science is of little avail in the brute here and now in which we live. It is because Tristram Shandy must soon perish that his biography is an absurdity. Even if we grant him infinite life, that will not remove the difficulty, for we conceive the ill-fated Shandy as living

<sup>10</sup>Russell, B., *Mysticism and Logic*, pp. 90 ff

this time, which now appears as a time of waiting which grows ever more and more acute.

The truth is that mathematical time has only a conceptual reality. Even the clock is in the sphere of lived time: even *time as motion* is continuous, and the clock's time cannot be repeated, since it progressively wears out. The physicist too endures a sort of time which never enters into his calculations. Suppose that a physicist were studying the rate of fall of bodies, and that he were using a pendulum as a measure of time. Suppose, however, that his attention wanders, that he "misses count", and must start the experiment over again. So far as the experiment is concerned, he may "repeat" time by setting the pendulum to swinging anew, but the physicist has "lost" some time which he can never repeat. During the siege of Syracuse, Archimedes was solving a problem in geometry. Who in this instance would urge the puerile principle that all intervals of solar time are equal? If he had chosen another day (albeit of equal length) for this computation, he might have saved his life, and the science of geometry might have been 2000 years further along.

We give time to the clock—it is not the clock which gives time to us. If the clock should suddenly reverse its movements no one would imagine that time has ceased to go forward. When we represent time by means of a line with an arrow-head, we again give time to the line by endowing it with the arrow-head. *The notion that time can be repeated has only conceptual usefulness in science.* The savant who supposes that there exists a universal mechanic, supposes that all events regularly repeat themselves. But, since this is not demonstrated at present, he relies on future research to remedy this defect. But, not only is historical time "intransitive" (never repeated), but it is *limited*. Plato well observed that in the realm of the immortals time is insignificant: time, like water, becomes sig-

nificant with scarcity. Time as we live it biographically is the destroyed. This live sense of the fortuity of time I find nowhere so well expressed as in a passage from Delboeuf:<sup>11</sup>

"My youth, has it not taken flight, carrying away with it love, illusion, poetry, freedom from care, and leaving with me instead science, austere always, often sad and morose, which sometimes I would willingly forget, which repeats to me hour by hour its grave lessons, or chills me with its threats? Will time, which untiringly piles deaths on births, and births on deaths, ever remake an Aristotle or an Archimedes, a Newton or a Descartes? . . . No, what has been will not, cannot, be again. Time moves on with an unfaltering tread, and never strikes twice an identical hour."

C. S. Peirce,<sup>12</sup> our modern Heraclitus, expressed the same thought as follows:

"If man were immortal he could be perfectly sure of seeing the day when everything in which he had trusted should betray his trust, and, in short, of coming eventually to hopeless misery. He would break down, at last, as every good fortune, as every dynasty, as every civilization does. In place of this we have death."

In a sense, the mechanistic view of the world is a struggle against this very fortuity and finite character of time. Note, that if the universe were a perfect mechanism, *it could not cease to exist, but could only return to its initial state*. We may demonstrate this point in terms of some very recent and highly interesting developments in science.

In physics we encounter certain phenomena which have been called "hereditary", because they exhibit the effect of the past states on the present state of a physical body.

<sup>11</sup>Cited from Wm. James, *Some Problems of Philosophy*, p. 148.

<sup>12</sup>Peirce, C. S., *Chance, Love and Logic*, p. 72.

Now, it is the essence of the idea of the mechanical, that *the future state of a body* depends on its "present" state. Time does not "bite into physical phenomena", so Bergson expresses it: there is no accumulative addition of its past states. The clock is useful as an instrument to measure time because time does not effect it, the clock neither "learns" nor "forgets" its peculiar function. In instances in which the future state depends on the past state we have heredity. Now, the flexure of rods and rubber illustrates the presence of "hereditary" phenomena in matter. If a steel rod is loaded at one end with weights which successively increase in amount, we will find that when we unload these weights, the rod never returns to its initial starting point. The curve of return is always different from the outgoing curve. Thus, Hooke's law, which expresses the relation between the tension and torsion of a wire as a constant, is only approximately true. This "hysteresis" is present also in phenomena of magnetization, perhaps in all physical phenomena. Volterra<sup>13</sup> calls these phenomena "hereditary." Painleve has attacked this idea, alleging, among other things, that it implies "action at a distance in time." But, Volterra replies, Newton's principle (of gravity) which all physicists accepted until very recently, implies "action at a distance in space", which is equally repugnant. However, Painleve indulges a groundless alarm if he imagines that Volterra's peculiar fancy for the phrase "hereditary mechanics" means that he has actually forsaken mechanical analysis. On the contrary, it is the mission of Volterra to save mechanics by showing that *these hereditary effects vanish with time*: the principle of the closed cycle is restored. That is, Volterra is demonstrating that after a lapse of time, a wire upon which we hang weights again satisfies Hooke's law,

<sup>13</sup>Volterra, *Fonctions de Lignes*. See M. Winter's, "Time and Hereditary Mechanics", *Monist*, XXXV, pp. 70-80.



and ceases to exhibit "hereditary" phenomena. Eternal mechanism is assured if only the effects of the past will vanish. Yes, history is real only because *we refuse to forget*; life must end when the repetition of states becomes a universal fact. Thanks to the fact of unit characters (sublimated memory) plants and animals may evolve to a higher life. Paradoxically, we can only escape the past by remembering it, a truism not confined to Freudian psychology. Thanks to our conscious cultivation of history we may have progress instead of vegetative proliferation upon a given level. What could be more stupid than a universe which endlessly repeated its states, or the Hegelian "absolute", forever transfixed by its own profundity. Such a "world history" would read like Mark Twain's first diary, "Got up, washed, went to bed—got up, washed, went to bed." We maintain consciousness by shaking off habit, which seeks to engulf us in unconscious slumber. The structural and automatic side of our nature never quite succeeds in containing us, we are like vessels that are continually "boiling over". Our power of thus always slipping away from mechanization is projected as *time*, just as our power of motion is projected as *space*. When science denies the reality of future novelty, it not only flies in the face of logic, but goes entirely beyond its own requirements.<sup>14</sup> James well observes that all that the scientist requires of the future, is not that *all be given*, but that *nothing should be lacking*. That is, the fact that science can predict that *something* will be true tomorrow, does not entitle him to say *what else besides* will be true. We can legitimately assume that the counted things are limited, not that the uncounted ones are.

This same incommensurability holds between present mechanical knowledge and the past. Poincaré raises the

<sup>14</sup>James, Wm., *Some Problems of Philosophy*, p. 162.

question, Have the laws of mechanics themselves evolved?<sup>15</sup> He answers, if they have, we could never know it. For, we have only the present state of the world as a record of its past. Then, suppose that we reconstruct the world's past, by applying our present laws to the data of the world's present state. It is evident that we could never meet with a contradiction in making this reconstruction, provided that no disharmony existed between our present data and laws. Then, suppose that we find deep in the earth a geological condition which shows a past different from the one we have reconstructed? Will we conclude that the laws of mechanics have evolved, and that they were different in the past? No, for the scientist can always say that our present laws of mechanics are faulty, and must be modified to cover the new facts. This amounts to saying that scientific laws do not enable us to recover historical facts. *It is just because a law applies equally well to a multitude of instances that it is impotent regarding the question as to which instance actually occurred.* Newton's law of gravity will not tell us *when* the apple fell. Indeed, the strength of physical principles lies in their flexibility rather than their rigidity: their flexibility saves them from the possibility of contradiction. Suppose that yesterday two bars of hot iron were dropped in a vessel of water, and that today the temperature throughout is the same—say, 60 degrees C. Now there are an infinite number of possible temperatures of these bars which would give this present temperature, and to prove one "set" of such temperatures false could not effect thermodynamics. The only limitation of thermodynamics is that it cannot say, from the present state, *what* the original temperatures actually were—this is a fact of history.<sup>16</sup>

<sup>15</sup>Poincaré, Henri, *Dernieres Pensées*, p. 9.

<sup>16</sup>We might, in fact, generalize this instance and say that the familiar law of the degradation of energy (the tendency of all energies to change into heat and for heat to distribute itself uniformly) exhibits a deeply rooted tendency in the merely physical world to *eradicate its past*.

Harry Hollingworth<sup>17</sup> gives an admirably clear exposition of a certain fallacy which tempts all evolutionary reconstruction. We are led to imagine that because we have before us in the present a series of graded forms, increasing in complexity, that we may infer these to be stages in an evolutionary development. He illustrates the misuse of this device in the hands of Brentano, Stout, Kropotkin, Helmholtz, Wundt, and others. To suppose that the existence of a graded series proves that they shared a serial genesis in the past is a clear instance of the fallacy of *affirming the consequent*. If there is a fire, we may affirm that there will be heat, but not conversely (since heat may be due to friction). That is, we may affirm the antecedent, but not the consequent. Thus, if there is an actual historical record of evolution, we may affirm that there will be intermediate stages, but the (consequent) fact of intermediate stages does not justify the inference that they belong to the same genetic continuity. Again we arrive at the result that historical facts are open only to a unique method. This is what Simmel meant in the statement,<sup>18</sup> "Law has an ideal character, no bridge leads from it to the tangible reality." The technique proper to historical research has long since been reduced to manual form, and is as much an accomplished fact as technique in other sciences.<sup>19</sup>

### III

#### *The Positive Role of History: "Historical Synthesis"*

The considerations just offered positively justify Windelband's distinction<sup>20</sup> between *sciences of law* and *sciences of events*. The reality of time will not down—it rises again

<sup>17</sup>Hollingworth, H., "The Logic of Intermediate Steps", *J. of Phil.*, XXII, pp. 169-179.

<sup>18</sup>Simmel, G., *Die Probleme der Geschichtsphilosophie*, p. 42. Cf. Fling, *op. cit.*, p. 12.

<sup>19</sup>Such as the work of Langlois and Seignobos, Ernst Bernheim, F. M. Fling, and others.

<sup>20</sup>Windelband, W., *Geschichte und Naturwissenschaft*, pp. 16-19.

and again to verify a certain cryptic prophecy of Anaximander that "All things . . . must render each other atonement and punishment for their offenses against the order of time."

Granting that history provides the raw materials for many of the social sciences, does it do anything else besides? Does it own any data except precarious and temporary "novelties", which are bound to become the data of science if they multiply? Wilhelm Dilthey<sup>21</sup> declared that history, like our own lives, is not a means, but an end in itself. But, is the content of history an end in itself like the narrative story, which offers particulars as objects of idle curiosity? I propose to outline in this section a more fundamental role which history plays than the role of providing raw materials for sociology, or of offering to our minds, surfeited with the present, an escape to other times and places. History gives us *values* which are not subsumed under a law, but which may become *goals of endeavor*. We must distinguish sharply between a *quantitative law*, dependent on the frequency of its instances, and an ideal value, which, though not independent of experience, is yet *independent of the amount of it*, in the sense proposed by Driesch.

Thanks to innumerable observations Newton's law of gravity is true, but in the moral sphere one instance alone can generate belief. The one sacrifice of Christ for sin and the one sacrifice of Socrates for truth are examples. To be sure, both Christ and Socrates were followed by a multiplication of instances, but only because *the first instance convinced*. Indeed, one might extend this principle to the perceptual sphere in general. One perception of the color red would be more illuminating to a blind man than knowledge of a whole volume on color vision. It is notorious in scientific instruction that the student does not grasp the sig-

<sup>21</sup>Dilthey, Wm., *Einleitung in die Geisteswissenschaften*, I, p. 114.

nificance of a physical law until he sees it demonstrated—a laboratory demonstration is like a religious ritual from which we go with a form of enlightenment which only immediate experience can give.

We may state that the basic principle of history is the *conservation of values*, just as the law of the conservation of matter is the corner-stone of physical science. Physics posits the conservation of matter. So that if you lose a dollar, it is only lost to the "here and now"—you may be sure that it is conserved "somewhere" (though this is little comfort). Perhaps one significance of this principle lies in the fact that it saves the hope of recovering the dollar, somehow. Just so does history conserve as much *variety of the "ways of life"* as possible, so that any value (whether moral, aesthetic, or religious) may still be realized in the present. Thus, to the bulk of his contemporaries, Roger Bacon was a useless fool; yet, thanks to the fact that his doings were recorded, the present age has an example of one way of living which we would fain imitate. Even those who have defended the mechanistic conception have had something more ulterior in mind. Auguste Comte cherished empirical scientific laws above all else, but why? Because knowledge insured foreknowledge, but neither is foreknowledge his final goal. His formula is: "Knowledge, whence foreknowledge; foreknowledge, whence action."<sup>22</sup> It is not true that Gabriel Tarde makes imitation the basis of our lives. We imitate not only our contemporaries, but men of the distant past, hence imitation is a potent action at a distance in time, it is "generation at a distance." The important thing is not *imitation*, but *what is imitated*, namely *invention*.<sup>23</sup> Herodotus, the

<sup>22</sup>Comte, A., *Cours de Philosophie Positive*, I, p. 63. Cited by Burr, G. L., *Am. Hist. Rev.*, p. 270.

<sup>23</sup>Tarde, Gabriel, *Les Lois de l'Imitation*, Eng. trans., p. 38. Cited by Burr, *op. cit.*, p. 271.

father of history, wrestled history from poetry so that the achievements of men should not "fail of renown."<sup>24</sup>

Dr. F. M. Fling<sup>25</sup> clearly embodies the above conception of history in his endorsement and extension of Rickert's ideas. The object of history is to attain the individual and the unique. But the historian cannot record all unique things; he too must select. "We have to do here," he says, "with a question of value, with a standard."<sup>26</sup> The historian "chooses from the endless number of individuals those that are valuable because they are unique, whose uniqueness is inseparable from their unity, and that thus have an importance because their loss or destruction would be irreparable."<sup>27</sup> Note, that this does not assign to the historian the function of deciding what is valuable, and preserving records in accordance with these individual notions. The history of the reformation written by a Catholic could never agree with the record of the Protestant historian so long as they assume the role of moralists. But, if they proceed scientifically (i. e., if they confine themselves to recording the unique, from which all values are drawn), they will arrive at the same results. Nor does this imply that the unique is attained by omitting repeated phenomena; *the unique includes repeated phenomena minus the repetitions*. In short, like exact science, the data of the historian is dependent on experience, but unlike exact science, *the data of history is independent of its frequency or amount*.

Since the historian ignores the aspect of the frequency of phenomena, he does not subsume his data under laws, but puts events together to form larger wholes. "The Protestant Reformation is intelligible only when treated as a part of that larger whole that embraces the entire reform

<sup>24</sup>Burr, G. L., *op. cit.*, p. 255.

<sup>25</sup>Fling, F. M., *op. cit.* I am throughout indebted to this article for citations and basic ideas.

<sup>26</sup>Fling, F. M., *op. cit.*, p. 14.

<sup>27</sup>Fling, F. M., *op. cit.*, p. 14.

movement in the Latin church in the fourteenth, fifteenth, and sixteenth centuries; again, the history of the Reformation as a whole must be treated as a part of the whole history of the church, embracing the Eastern and Western churches, or it may be looked upon as a part of the historical life of Europe."<sup>28</sup>

The peculiar advantage of the logic of synthesizing parts into wholes (as opposed to subsuming particulars under a law) is that it enables us to preserve the individuality and uniqueness of the parts. This form of synthesis is asserting itself at present in the sphere of psychology as it is championed by the *Gestalt* school. Fling illustrates its use in various ways. It permits a sharp separation between the work of the sociologist and the work of the historian. "What Luther has in common with other Germans might be important for the sociologist; it would not be for the historian. It was just the thing that was unique in Luther, that distinguished him from other Germans, that rendered him important for the Reformation and for the whole subsequent life of Germany, that makes him an historical character."<sup>29</sup> These statements are true, for had Luther been like other Germans, there would have been no Reformation. This is not gainsaid by supposing that another individual might have done the same thing: he would not have been Luther in name (there is nothing in a name) but he would have owned all of Luther's uniqueness. Nor can escape be sought in the statement that the Reformation would have failed if there had not been many "like Luther" to imitate him: Tarde's distinction between *invention* and *imitation* saves the difference.

#### IV

#### Conclusions

It is not, then, that science and history oppose each

<sup>28</sup>Fling, *op. cit.*, p. 15.

<sup>29</sup>Fling, *op. cit.*, p. 16.



other. They offer us two accounts which are equally true, but different truths. Should we then speak of the historical and the mechanical "points of view"? But, two points of view are presumably of the "same" reality. I rather incline to think that the opposed accounts of history and mechanics are accounts of *opposed realities*. One is the science of the inert, the other is the science of life, and between inertia and life no common denominator exists that I am aware of. There may indeed be eternal conservation in the sphere of physical matter, whose being is somehow "guaranteed". But there is a sphere of spirit and value over whose concrete existence hangs, not an axiom, but an ever-pending question, "To be, or not to be?" To record the waxings and wanings of this reality is the function of history, which gives us, not formulae, but a timeful drama.

This is opposed to the view of idealists among philosophers who assume a vantage ground from which this dramatic time order will resolve itself into an eternally present and absolute reality. Thus, Aliotta<sup>30</sup> declared, that "to a thought taking in at once all the universal and special determinations in the single fact, there would be . . . only philosophy, which would also have the concreteness of history." We can only assent—provided there *exists* such an all-embracing thought. Perhaps God has it, but that is God's enlightenment, not ours.

C. O. WEBER.

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<sup>30</sup>Aliotta, Antonio, *The Idealistic Reaction Against Science*, Eng. trans., p. 445.

## EVOLUTION OF RELATIVITY

**A**LTHOUGH I am not writing in Tennessee, I should explain my heterodox subject. While I believe that all becoming, all change, is a real evolution in the relativity of things, here I mean by evolution merely an orthodox process of *unnatural* selection by which human understanding has arrived at its present concept or attitude of relativity. I mean by relativity—and, please, will no one suggest to a Southern legislator that the last word of my subject is more devilish than the first—relativity in its most fundamental and general sense, relativity as a characteristic and constituent of the real. Man's appreciation of this characteristic has been an evolution.

By relativity I do not mean relativism or subjectivism, which words are vitiated by dualistic and absolutistic assumptions. Relativity is the state or, more often, process of differentiating, of making a difference. In the absence of relativity no differentiation can exist, nothing but an infinite, continuous uniformity which is identical with non-being. I repeat, where no difference is, nothing is; where difference is, there something is, and that something is relative. It is relative in that it owes its very existence and nature to the relations it shares with other things. If it has extension, duration, or motion, feeling, thought, or meaning, or any other characteristic, even existence, it has each and all in virtue of its relations with something else. For what is absolute being, or being with respect to itself?

Even nothingness, from its *own* point of view, has being. When clearly conceived, space without differentiation, or absolute space, is simply nothing. Likewise, absolute time, substance, spirit are severally and, therefore, collectively nothing. But given differentiation or relations, then time, space, motion, and even spirit are also given. Spirit or mind is a matter of degree, manifesting itself in proportion to the complexity and internality of relations. Individuation consists in relative differentiation of relational configurations.

Only space can differ from time, and only time from space. Time is differentiated space, and space is differentiated time. Space-time is, from different points of view, relative motion, energy, process, perception, appreciation, thought, creativity. This is not a genetic description. Since the process of reality constitutes time, these attributes of the real have always existed, and the real has always been a complex organizing and creating of relations. Like the checkerboard, or better, because of its greater complexity, like the game of chess, these fundamental relations must obey certain unalterable laws, but they also have an indefinite range of possibility, opportunity for purpose and error, and capacity for failure or success. From the point of view of science we have discovered within this relational process a few laws of combination which are very probably, for the present at least, quite deterministic. From the point of view of certain complex portions of this process such as, for instance, finite minds, when these portions or minds function not merely analytically, but also with immediate synthesis as in sensation, appreciation, or intuition, we discover within reality quality, purpose, consciousness. In brief, the logically fundamental metaphysical unit is a spacio-temporal differentiation or relation which, while continuous with other relations, has a geographical, historical, and configurative individuality. Being spacio-

temporal, these relations necessarily consist of motion and, therefore, manifest energy. And relative motion which is of such sort as to constitute space-time, must be vital. I mean by this that it manifests order, consistent change, appreciation, creativity. This process has its deterministic, quantitative characteristics, and also its purposive, appreciative capacities. From many standpoints it is material; from many others it is spiritual; from others equally significant it is neither or both. At least logic and science, introspection and intuition, have enabled us to see from various vantage points this infinitely complex process of which we are intimate parts. To this synthetic view of the nature of reality and knowledge the evolution of the concept of relativity has brought us.

From the metaphysical point of view the chief forms of relativity which appear in the history of the concept may be described semi-symbolically as follows:

Let  $R$  mean *making a difference to or in*, and let  $a$  and  $b$  mean objects or terms of any sort. Then:

Configurational Relativity is  $R^n$ , e. g. any complex set of relations, any object  $a$  or  $b$ , such as a crystal, tree, personality, quality or concept.

Simple Relativity is  $a-R-b$ , e. g. sun- $R$ -solar system. This is the form of psychological subjectivism and the theories of a non-absolute creator-god.

Mutual Relativity is  $a-R-b$  and  $b-R-a$ , e. g. individual- $R$ -society and society- $R$ -individual. Leibnitzian monadology and socialism exemplify this type.

Absolute Relativity is  $R^n-R-R^n$ , e. g. the state, such as the electro-magnetic field or the human mind, in which nothing exists but relations and relative configurations of relations. This characterizes reality as I conceive it, and also, I believe, as Professor A. N. Whitehead, perhaps less absolutely, would hold.

Particularly Limited Relativity is  $a-R-b$  but not  $b-R-a$ ,

e. g. seal-R-impression but not impression-R-seal. This is distinguished from Simple Relativity by its emphasis upon the asymmetrical character of the relation. It is limited because the relation is significantly internal to only one term; and it is particular because all the relations sustained by the other term are not external. Kant's categories and Plato's ideas represent this type of relativity.

Universally Limited Relativity is  $a$ -R- $b$  but not  $b$ -R- $a$ , and for every value of  $x$ , it is false that  $x$ -R- $a$ , e. g. where  $a$  is the Absolute upon which all else depends but which itself is independent or unaffected by anything. This type includes the Indian Brahman and the absolute of Plotinus.

Selective Relativity is  $a$ -R-some  $b$ , e. g. sense of sight-R-some light rays. Here Kantian epistemology and specific methods, such as the scientific and the mystical, are typical.

These forms of Metaphysical Relativity, i. e., relativity in the nature of the real or being, have corresponding forms of Epistemological Relativity because experience or knowledge is just as real, and just the same sort of reality, as anything else. With respect to the relations between the so-called metaphysical and epistemological realms, simple relativity may be called Mediary Relativity,  $a$ -R- $b$  where  $a$  is some medium, such as air or light rays, between the knower and the known, and  $b$  is the resultant knowledge. Mediary relativity has the forms of Physiological Relativity where  $a$  is part of the knower's body; Psychological Relativity where  $a$  is the nature of the mind; Pragmatic Relativity where  $a$  is the interests, desires, temperament of the knower; and Historical Relativity where  $a$  is tradition, education, the political and economic conditions, and such factors of historical epochs as influence judgment or appreciation. This classification is, of course, more or less arbitrary, and itself relative.

Chronologically, the absolutistic attitude precedes the relativistic. Primitive man, who represents a stage in human evolution including, according to *future* historians, the twentieth century, seems naturally inclined to absolute explanations. Largely because of his desire to utilize the beneficent, and placate the malevolent, forces about him, man has been so eager for absolute knowledge that often he has almost deliberately deceived himself into believing he possessed it. Even the civilized man can refuse to look through the telescope for fear his faith may be shaken. Negative instances are notoriously difficult of observation. The Vedic sacrifice is master even of the god of thunder; and if one tithes and sits in the pew on Sunday, one fears not death. Moreover, the definiteness and convenience of the simple, unconditioned explanation favors the absolutist tendency. Man's limited experience and his insensibility to the infinite complexity of fine distinctions led him to consider absolute the aspect of things as seen from his usual point of view. The earth is flat, for we have seen it so with our own eyes. The fundamental substance is water, or air, or spirit, or electricity. One can see that Euclidean geometry alone is valid. The earth is at rest;—no, it moves and the stars stand still;—well, you can take your choice! Thus, seeing things in an increasing variety of aspects or relations has changed our judgments and heightened our sense of the dependence of our judgment upon our particular point of view. All viciousness or subjectivity in this conception of relativity is circumvented by the denial of any substantial distinction between the subject and the object, by the recognition that particular points of view are just as spacio-temporal and just as spiritual when they are our own as when they are the moon's.

The pre-Socratic hylozoists and the unsophisticated Sophists, with their helmsman in Heraclitus, started phil-

osophy on a tack which might have kept Western culture out of the doldrums in which it drifted for two thousand years had not Socrates and Plato brought about a calm so absolute that even Aristotle could not keep his sails inflated. The Milesian school explained reality equally well by taking as their point of reference any stage of the world-process such as water, air, or the boundless. In terms of this more or less arbitrarily chosen absolute all else had its being and could be known. Like Thales, Pythagoras, too, was more relative than he knew, for before Einstein the Pythagoreans "put the world in numbers." The anti-anthropomorphism of Xenophanes, the fiery flux of Heraclitus, and the man-measure doctrine of Protagoras proved too much for the traditional absolutism which, with respect to religion, morality, and the state, would let well-enough alone. Instead of accepting relativity and beginning a collection and classification of aspects, Socrates and Plato soared into the heavens in quest of an absolute pattern for the whole, and the parts, of a perfect and unchanging city-state. They graciously granted Heraclitus his flux. Things *are* changing and relative, but *things* are imperfect and lacking in reality. Just here Aristotle almost saw that ships could sail in spite of Platonic calms. Nothing for him was more real than the particulars; their perfection was relative to the unique potentialities which resided in the nature of each. *Your* Golden Mean could not be *mine*. Matter and form, even primitive matter and pure form, potentiality and actuality, non-being and being, like genus and species, are instances of mutual relativity. In the first pages of the *De Motu Animalium*, chiefly, the assumption that only the immovable could create movement kept him from the conception of the relativity of motion. Yet Aristotle had spent too many years in the Academy not to finish by assuming an unmoved mover and the immortality of species. The attention was again shifted from identities to differences



by the Cyrenaics, whose psychological and epistemological relativity was continued by the Epicureans. Yet, as in all of these early relativistic views, something like the Epicurean atoms forms a background of absolutistic assumptions. This fact is implied by the very name of the last representatives of this tendency in Greek thought, the Sceptics. It is latent in the concept of probability as developed by Carneades. The Sceptics of the first century of the Christian era contributed to the evolution of relativity by arguing that a cause is a relatum which can neither be synchronous with, nor precede or follow, the effect. Here the argument waited for David Hume. In passing, one may remember the beautiful characters of Arcesilaus and Carneades, a consequence, perhaps, of their philosophy.

Throughout the Middle Ages the concept of relativity awaited the conquering of the unexperienced minds of Western Europe by the centered might of Christian and Platonic absolutism. The relativistic attitude, however, was never entirely absent. Even mysticism has more significance here than appears at first sight. It bears witness for relativity not only negatively in the extent of the world against which it turns its back, and in its opposition to the formulated dogmatism of the period, but also positively in its ready acceptance, as Hocking expresses it, of "a present inspiration as its law." Among the intellectuals this same tendency was kept alive by the growing emphasis upon nominalism. The conception of the relativity of perception and of knowledge was chiefly responsible for the new view of the world created by such minds as Nicolaus of Cusa, Copernicus and Giordano Bruno. Burnt offerings of living men were sacrificed on the altar of the absolute that a Galileo, a Kepler, and a Newton might live and think. Here at the dawn of science the evolution of rela-

<sup>1</sup>*The Meaning of God in Human Experience*, New Haven, 1923, p. 400.

tivity was rapid, and culminated in Newton's formulation of the relativity of motion. Yet even Newton was unable to trust his insight, and postulated absolute space, time, and motion. He showed, however, that the followers of a creative mind may be more dogmatic than their master. Newton said that he was only like a boy playing on the seashore, and diverting himself in now and then finding a smoother pebble or a prettier shell than ordinary, while the great ocean of truth lay all before him.<sup>2</sup> And Einstein, making a substitution for Descartes's name in another of Newton's remarks, might say, "If I have seen farther than Newton, it is by standing on the shoulders of giants."<sup>3</sup>

Here I can but mention the steps in the evolution of relativity through the dogmatic abduction of the scientific methods by Descartes, Spinoza, and Leibnitz; through English empiricism and scepticism with its almost complete emancipation from religious absolutism; through German criticism and idealism with its reserve strategy making the last stand against the allied relativistic forces of individualism, positivistic philosophy, psychology, and science; the pragmatic and neo-realistic attitudes of mind; and the development of mathematical theory and scientific experimentation, particularly non-Euclidean geometries and electro-magnetic and optical hypotheses.

In science the flower of this evolutionary growth is the theories of Einstein. Einstein's accomplishment is chiefly a synthesis of the results of many different fields of investigation. It deserves the name of physical relativity because of the fundamental role played by the mutual relativity of time and space and the absolute relativity of motion. This is a physical and metaphysical relativity because the real nature of things or events varies with their

<sup>2</sup>Cf. W. T. Sedgwick and H. W. Tyler, *A Short History of Science*, New York, 1917, p. 300.

<sup>3</sup>*Loc. cit.*

relations. Einstein's frequent mention of the observer's point of view has led to a confusion of relativity with subjectivity; but in every case the observer could be replaced by some other recording instrument. Moreover, for Einstein the observer, even in a psychological sense, does not necessarily differ in kind from other parts of the space-time continuum. Mind, like matter, is space-time or nothing. From certain points of view, however, his whole position is characterized by a selective relativity. It is relative in fact, if not in form, to the highest velocity we know, that of light. It is relative inevitably to the fact that our observations must be made on, and from, the Earth. But of still greater significance for philosophy, the Einsteinian view of the world, like the behavioristic view of the soul, is relative to the mathematical or measuring approach of science. From these points of view the theory of physical relativity probably presents an approximately accurate description of an important aspect of reality.

We seem to be ready for a thoroughly relativistic philosophy. Reality is a complex of relations. Entities are relational configurations whose nature and boundaries are relative to the point of view. Such reality and such entities exhibit permanent quantitative characteristics. They exhibit also creativity, originality, development, design. This aspect is most evident to introspection and intuition, which relationships are no more psychological than metaphysical. Knowledge is not a function peculiar to that portion of reality we call human, although man most readily recognizes it himself and in other entities which his crude senses represent as most analogous to himself. Receptive knowledge is taking account of the differentiations in one's environment in such a way as to retain a corresponding set of differentiations within one's own complex of relations. In this way both quantity and quality consist of relations. The most evidently relative are the so-called

primary qualities. This is indicated by the inconceivable example of a universal uniform variation. It is said that if absolutely all velocities were suddenly reduced to half their present rate, or all things to half their present size, we should never know the difference. They say truly, for there would be no difference. Such a uniform variation is no variation at all. Likewise, the secondary qualities are but systems of differentiation. If your perceived color-scheme varies systematically from mine, it does not vary at all. Yet qualities of this sort, which are introspective appreciations, cannot be reduced to quantity, although the same set of relations seen from a different point of view and in a somewhat different total situation, appears as quantity. The validity of the qualitative aspect is suggested by the fact that all the wisdom which the method of physics and behaviorism can acquire, can be communicated entire to the congenitally blind man, but can never enable him to understand or appreciate the quality red. The colors correspond to differentiations in certain complex situations which include eyes. The epistemological significance lies in the theory that the system or form of the relations or differentiations constitutes quality. Except for other relative considerations, such as empathy, the Venus of Melos is just as beautiful in statuette as in heroic size—it is her form that counts.

I shall neglect a consideration of the relativity of value for a final observation concerning the value of relativity. First, with respect to accuracy. If Ptolemy, Copernicus, and Einstein each had said, "Relative to my point of view, to the data at my disposal, the most probable explanation of the world is the following," each would have spoken an eternal verity. Moreover, that attitude would have discouraged their disciples from burning at the stake those who would bring forward new data. The relativistic spirit is death to censoriousness, dogmatism, and such sectarian-

ism as is seen in religion and psychology today and in the way many scientists accept or reject Einstein. In ethics and religion, for how many millions of the most enlightened lives must absolutism answer! Without the support of the absolutistic attitude of mind, crusades, holy wars, inquisitions, and pogroms would at least have caused conscientious hesitation on the part of their devoutly sincere perpetrators. Nothing is more encouraging for fanaticism, or more discouraging for sustained effort, than so-called absolute ideals, which, for all their dialectical and revelational justification, are intuitively known to be unattainable, and somehow untrue of the real world. The result is jugglery in the moral life, or a consistency which is worse because sanctioned by fear which is maintained by an ignorance enforced at the hands of absolutism. Relativity goes forward with the conviction that the relative ideals of the present are attainable at least in that part of their essence which requires that they shall change and develop with increasing experience and knowledge. Relativity says that no ideal that can be known in the present is good enough for the future. Moreover, my ideal is never good enough for another man. This all means that collectively and individually we must help discover our own ideals, and, because they are relative, act vigorously upon them in order that their relativity may become more and more inclusive, true of more and more reality, ever adapting them to the actual situations of which they must form parts.

In this day, when no man can take all learning for his province, cooperation, the sharing of points of view, is necessary for progress. Since things are essentially relative, the best policy is to see a thing in as many of its relations as possible. In philosophy the absolute played the vicious role of the lotus, lulling to sleep in a dreamy nothingness those who might have been courageous searchers for new points of view. In science the absolute has, for

the same reason, delayed discoveries for centuries. Once the earth was believed flat or at rest, man could be roused from his lethargy only by the dogged insistence of circumstance in the form of a few men who for truth's sake would risk the absolute's hell.

The relativistic attitude does not lead to scepticism. The relativist knows that only by action on the basis of present knowledge, with a full awareness of its relative character, will he discover new facts, and arrive at more comprehensive, and therefore more useful, generalizations. The believer in the absolute hesitates to act from fear of his having failed to comprehend the absolute. The relativist knows that there is no awful absolute; knows that action must be based upon the relative; knows that the world is an inexhaustible stream of increasingly interesting relations which will blend each individual personality in an ever greater harmony with other personalities and the rest of reality.

"New times demand new measures and new men;  
The world advances, and in time outgrows  
The laws that in our fathers' day were best;  
And doubtless, after us, some purer scheme  
Will be shaped out by wiser ones than we,  
Made wiser by the steady growth of truth."

—Lowell.

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## HEGEL AND FREUD

### I

THE unconscious self is postulated by Freud and is an integral element in his psychology, but it seems to me to be a contradiction in terms. It may therefore be worth while to attempt to find a substitute. Such a term must be valid, and, if Freud's system is a complete system, it must be demanded by the other terms which constitute the system.

Certain determinations of the mind are said to arise out of the Unconscious and again to be repressed into it when the historical description of the event would be "there was not, but now is" and "there was, but now is not." The Unconscious is that into which these determinations sink, and out of which they arise. Further, "the Unconscious" means, I think, a collection of unconscious states so that Freud is not involved in the fallacy of positing a form which is nothing except the totality of its content. But if he succeeds in avoiding this fallacy the alternative is that he must predicate something of the unconscious states and this is impossible, for a state of the mind can be experienced only by the conscious mind, or, rather, is a modification of consciousness. What has been said in this paragraph is not designed to be additional proof of the invalidity of "unconscious self": it is intended to make more acceptable the proposition that "we must predicate Nothing of the unconscious self" and thereby to indicate



a similarity between a part of Freud's system and the beginning of Hegel's.

This similarity becomes significant if it can be shown that the phenomena from which Freud deduces the existence of a subconscious self are proper to a state of mind which can be described by saying that the mind is in a low category; what is meant by this is that the category is lower than that in which the mind is whenever it has normal, workaday consciousness; and by category is meant a state of mind in which it is so related to the external (together with which it forms a system) as to be aware of it as a collection of a particular kind of terms related in a particular manner; each category has a peculiar set of terms having a peculiar relation. "Category" is here used, I think, as Hegel uses it, except that it has a subjective element, which is involved by the nature of the question. It must now be shown that the phenomena just mentioned are, in fact, phenomena in the mind when it is in a low category.

Among these Freud discusses errors in speech—substitutions of wrong words, and the like. It is difficult to account for any error, unless it is believed that the mind can operate capriciously; and capricious action is incompatible with the nature of mind, which is to understand: how only that is intelligible to which a rule, or something analogous, can be applied; and a rule cannot be applied capriciously. But the phenomenon of error exists and must be accounted for; and, since it cannot be merely meaningless, it must be allowed to have some significance. If, where A is demanded, A' is said, there is some relation of similarity between A and A'; they are similar in sound, or at any rate, each is a word, a unified group of syllables. If this similarity could be changed into identity the substitution would be accounted for; and this identity does, in fact, exist for a mind to which neither A nor A' is a word

in the sentence which it was expressing, but is a term in some system other than the sentence. It is a system in which the mind adequately expresses itself in mere vowels, or in mere Somethings whose characteristic is that each is none of the others. Now such a system (or category) is manifestly lower than that in which the mind is when it expresses itself in the sentence in which the error was assumed to be made; for (to touch the first example only) a word is richer than a vowel to which the consonants are irrelevant. So that when an error is made the mind passes into a lower category, and the error is the manifestation of the presence of two categories in one unit of experience. The subjective cause of this relapse is neglect of intellectual effort or "concentration"; but it must be admitted that it is still not clear how such a negation of intelligence can arise in intellect.

Another error which Freud mentions is "compensation." After A' has been pronounced where A was required, an attempt is made to retrieve this error by substituting B' for B; the terms denoted by these letters may be either words, syllables or letters. Such a rectification is permissible in a category where the totality is the sum of its terms, and no more, and the validity of each term is not affected by its position, so that the category is a quantitative category. But the elements of a sentence are richer, each having significance by itself and also being in a relation of reciprocal determination to the other elements and to the whole; the category in which the mind is able satisfactorily to retrieve error by "compensation—that is, to perceive no error in a system governed by "compensation"—is, therefore, a lower category than that in which it is when it expresses itself in a grammatical sentence. It is unnecessary to assume any unconscious awareness which causes rectification by "compensation," and the correct statement of this event is, I think, that the mind

operates, at the moment, in a certain (and lower) category. The nature of the terms of a category, and their relation to one another is partially preestablished, since every category is an approximation to Reality and must therefore have the quality of coherence and completeness; it is therefore impossible to assume that the mind should modify the terms of a category once the category is given. But it is possible that mind should be in one category and again in another, and that these transitions should be quick and irregular.

It might appear that errors like consistent forgetting could not be explained except by the assumption of a permanent unconscious force operating to prevent the action, which is frustrated by being forgotten. An example which Freud quotes with approval<sup>1</sup> refutes this view. E. Jones (who did not wish a certain letter to reach its destination) forgot, first to post it, then to address it and (upon its return from the dead letter office) to frank it. But an unfranked letter will fail to be opened by the addressee only if he refuses to pay the postage and charge. The definition of E. Jones' three omissions as manifestations of a force which would prevent the letter from being delivered is, therefore, incorrect. But they are correctly defined as omissions of ordinary procedure with regard to letters. Such omissions are commonly called acts of forgetfulness and are due to failure to concentrate (as the metaphor goes) upon the object. The despatching of a letter is a system of which (among others) the addressing, posting, and franking are the terms; each of these therefore logically implies the next, which implication manifests itself empirically as a remembering of acts suggested to itself by the mind as to be done. If a term is forgotten, the cause must be that the system as a whole was not understood with sufficient accuracy by the mind at the time when the mind

<sup>1</sup>*Vorlesungen*, p. 51.

was engaged upon it; and this inadequate understanding may very well have been caused by a contradiction between purpose and desire, so that Freud's inference from the observed facts is correct, although his reasoning is incorrect. Term A does not lead up to term B, *not* because there is an unconscious force operating to inhibit B, but because A appears not to imply B; the process is a logical process manifested temporally, and the relation between the terms which forces them to arise in turn is logical and not temporal.

It is less easy to give an account of dreams than of errors or "compensations." It will be most convenient to treat separately the interpretation which the dreaming mind applies to sense-data, and the processes of thought within it; these two classes of mental experience correspond respectively to the processes of observation and of reasoning in the waking mind.

With regard to the first class Mr. Bertrand Russell sums up the matter thus: "Dream-data are no doubt appearances of 'things', but not of such 'things' as the dreamer supposes."<sup>2</sup> And it may not be out of place here to quote a remark from Heine<sup>3</sup> which he made in the year 1828. "The same thing happens to poets as to dreamers, who so to speak mask the internal sensation which their soul experiences from real external causes: in their dream they substitute for the latter wholly different causes which however are quite adequate in so far as they produce the same sensation." Both authorities assume that there are 'things' or 'real external causes' which are misinterpreted by the dreamer; and it seems to follow that, if he were awake, he would interpret them correctly or in a more correct manner. But it seems that the perception of a thing also implies a theory about that thing; or rather, that there

<sup>2</sup>*Sense-data and Physics*, XII ad fin.

<sup>3</sup>Translated from *Reise von München nach Genua*, ed. 1861, p. 37.

is a relation of reciprocal modification between the thing and its interpretation. A patch of colour may be perceived as merely "white" and interpreted as "this white patch"; or it may be perceived (in a more developed manner) as "white, plastic and gleaming", and interpreted as "snow". Now the adult mind in its ordinary workings operates in such a manner as to perceive such data as do not appear to be in need of the kind of development which has just been mentioned; it operates in categories which appear to it to be adequate; this is the result of past experience (which term includes education); and the inadequacy of the data and of the descriptions of and assumptions about reality which they imply are only perceived by few, who, being led to further thought, come to have more valid perceptions as artists or, as philosophers, to hold sounder views about reality. If this statement is correct, then the relation between the mind of the artist or the philosopher and the ordinary mind is similar to that between the latter and the dreaming mind; and this relation is expressed when it is said that those three states of mind are three categories, each of which is higher than that which (in the order here given) follows it.

Freud is not greatly interested in the relation between the dreaming mind and the external world. He presumably believes that there is a fixed external world of realities which the dreamer merely misinterprets; and in this process the unconscious self cannot easily be given a significant function. He therefore concentrates upon the images which arise in dreams without any obvious connection with sense-data; and it is easy to make the unconscious mind the cause of these. If this satisfies his practical needs it is adequate; but systematically it is unsound; and it is more satisfactory to have shown what is the relation between the dreaming mind and sense-data and now to proceed to show

that the relation between the dreaming mind and dream-images is a similar relation.

Freud does not assign a single origin to all dream-images; he admits that some may be "day-remnants". But this class of dream-images has no place in his theory; the practice of his theory depends upon those dream-images which are symbols, and, since Freud's end is practical, he has a right to neglect the first class, as he does.

Where a symbol  $A'$  is used to symbolize a concept  $A$ , there must be some similarity between  $A'$  and  $A$ , otherwise it would be impossible to know that  $A'$  is the symbol of  $A$ ; and there must be a difference, else  $A'$  would not be a symbol and would be identical with  $A$ . Now  $A$  (by hypothesis) is a concept valid for the ordinary operations of the waking mind; therefore the content of  $A'$ , in so far as it differs from  $A$ , must be irrelevant; it is a matter which exists but equally might not exist, or might be different. And in fact many examples can be taken from Freud in each of which the same concept is symbolized in a different manner; so that some of his critics assert that any symbol whatsoever may be held to symbolize one single concept. Now it is clear that a category, where part of the content of the concepts with which it operates is indifferent, is inferior to a category, where the whole of the content of the concepts is indispensable; therefore the mind when it forms or is visited by dream-images is in a lower category than that in which it is when it operates with the concepts which the dream-images symbolize.

It has now been established that many of those mental phenomena in which Freud supposes the unconscious self to manifest itself are correctly described as phenomena appearing in the mind operating in a relatively low category.<sup>4</sup>

<sup>4</sup>It is not, of course, asserted that the sleeping mind is always in a low category. Not all its operations are dreams; but some (as where a Latin verse is constructed, or a chess problem solved, and this is known to have happened)

But it is certain (if a layman can be allowed to judge) that these phenomena are significant and that their significance eludes the description which has just been mentioned, while they become significant at once if Freud's view is admitted. It is therefore necessary to add to this description this, that they are phenomena from which correct deductions about certain past mental experiences may be made, but that they must not be made on the assumption of the existence of an unconscious self. It must, then, be shown how else it is possible that these correct deductions can be made.

What caused Freud to construct a subconscious self was the stability of that something (the Repression) to which these phenomena are observed to lead: as a container for the temporally persisting Repression he constructed the subconscious self. As a construction the subconscious self is invalid because (as has been pointed out already) it is a contradiction in terms; as an inference, neither it nor any temporally persisting entity is demanded by the facts. The facts (a recurrent series of symbols) merely warrant the inference that a certain event (the Repression) did at one time take place. And since this event does not perpetuate itself chronologically the suggestion may be entertained that it perpetuates itself logically.<sup>5</sup> Let it be assumed that a logical process has been broken off at the Repression; then (1) it will be an eternal fact that this break has occurred, although the break does not persist eternally; and (2) the mind may be caused to revert to the last term of the logical process because such a process contains a necessity of completing itself. Only in this sense the past fact is still operative.

are the operations of ordinary consciousness: and some dreams bring experiences which seem to have so profound a significance that they appear to deserve to rank above ordinary consciousness.

<sup>5</sup>It will appear in the second half of this paper that the persistence of the past in the present is of the greatest importance in giving a meaning to experience.



If this is correct, the following account may now be given. When a Repression takes place the mind refuses to admit the final term of a logical process and asserts that it must be neglected, which is contradictory. This false assertion can only be upheld by an effort, and when (as in sleep) the effort is relaxed the immanent logic which subtends mental events causes the incomplete process to be presented to the mind once more. It has been explained that a dream is not a disguise or distortion, but merely a representation proper to a low category. It remains now to show in what sense the processes which have been discussed are logical.

It has already been shown by examples that some mental processes are from category to category. I now suggest that all mental processes take place in this manner; and I assume that the presuppositions of the Hegelian dialectic are substantially correct. Hence the mind must always be in some category, and, as soon as it reflects upon the data of that category, must engage in a dialectic process (which has been called logical hitherto) until a (subjectively) satisfactory end is reached or else the process is wilfully broken off; it is not suggested that the objectively satisfactory end is often reached. An answer to the pertinent question why the subjective and the objective ends do not invariably coincide cannot here be furnished; such an answer would also imply an account of the origins of error and of evil; and it is doubtful whether a satisfactory account of these two problems has ever been rendered.

## II

Up to this point the experiences of the mind in lower categories than that of ordinary consciousness have been considered. Next there are to be considered those mental contradictions and troubles the effects of which can be observed in these categories, their cure by means of a logical

synthesis, and the progress of the mind to higher categories in sublimation.

Those troubles which Freud considers are neuroses; the circumstances in which they arise seem (from his examples) to be such that the mind, being confronted with a problem, fails to attain a correct solution; it makes a mere barren negation of the facts, and this denial vitiates whatever experiences arise from them. Freud, borrowing his metaphor from dynamics, gives the name of Repression to this negation; and it must not be forgotten that the process of repressing is partly at least affected by the will. But will, although it is the immediate cause of conduct, is not its ultimate cause; I think that, before will can act to repress, the mind must have acquiesced to an attitude in which it allows truth to a state of facts which it knows to be untrue. If this view is correct, Repression is due to an intellectual lie: but if not, and if will operates as prime cause, then will, as the phrase goes, acts a lie.

Freud<sup>6</sup> relates the genesis of a neurosis which, if examined, shows how bare negation of facts leads to the disease and how no medicine can be found until a regress has been made to the beginning of the trouble. An elderly married lady fell in love with her son-in-law. In order to justify this love, which she believed to be monstrous, she attempted to bring about a state of affairs (through an anonymous letter) in which she might have reason to believe her husband unfaithful. She developed a jealousy-mania which Freud was asked to cure.

The problem with which she was faced was, in the beginning, a conflict between her love and her duty. Reconciliation might have been found either by the justification of her love, or by its subordination to a system which was acknowledged superior to personal happiness. But no attempt was made to find such a reconciliation; and the need

<sup>6</sup>*Vorlesungen*, pp. 277-283.

for some solution still persisted. It was supplied by a fiction, the unfaithfulness of her husband, which was no justification, but only compensation. Now, since this solution was a fiction, it could not be disproved by facts; and, if it had seemed to be disproved by facts, its place would have been taken by another fiction, and must have been so taken. For, had any fiction allowed her happiness, then it would no longer have been fulfilling its function, since the function of the fiction was to supply a sorrow which should justify her wrongful conduct. Having relapsed into happiness she would have been forced to find another fiction and so to infinity. It will be seen that the whole process follows from an untruth, which in turn follows from a refusal to face a problem by itself and without the help of a compensating element from outside.

It appears then that the denial was the first term of a series of actions which followed from it. The mind of the patient had entered a system in which jealousy of her husband was a necessary element. Knowing that her servant was jealous of another woman and willing to harm her, she suggested to the former that she could have no greater grief than to have cause for jealousy of her husband. The result was that the servant forged such a letter as would give such cause, in which the name of her enemy was mentioned. This course of action taken by the lady Freud describes as the operation of her unconscious self. The correct explanation seems to be this, that the first term, the denial, implied further terms; (the hypothesis of infidelity demanded proofs): the connection between the terms is thus logical. It is unnecessary to assume that the intervals between terms in such a series are filled with subconscious mental operations. The transition from one term to the next in every series must be immediate; the opposite assumption involves a vicious infinite series. The intervals between terms of any series contain terms of other

series. The view which is being opposed to Freud's is, then, that the Repression (or untruth) is present in its later manifestations only as a cause is present in its effects; and it is denied that, having persisted in an unconscious self, its manifestations are emergences of it into consciousness.

This account may be criticized on the ground that it does not explain why the cause of the neurosis invariably escapes the consciousness of the patient. The explanation which the argument seems to demand is that which follows. The mind makes the original denial, not unconsciously, but also without having the conflicting terms presented to it in their explicitness; the neurosis could not arise if the conflicting elements were developed into a high category and were scrutinized by the full powers of intellect. But the regress from ordinary consciousness to those lower categories is not purely logical or one which can (in practice) be followed without the help of contingency. This is one difficulty which baulks the attempt to remember the origin of a neurosis. And, next, the denial itself is contradictory, since it is both the recognition of a fact and the refusal to admit it; it cannot therefore be fully understood by intelligence until it is analysed, and it is assumed that this has not happened where a neurosis occurs. And, since the fact has not been fully understood, it also cannot be remembered. For individual experience proves, I think, that only that can be remembered which appears to have significance in itself, or by virtue of the relation which it has to other members of a system (which may be experienced as having duration, or otherwise) of which it is a member. Now that which is not understood cannot be significant.

The cure of neurosis is attempted by analysis, a process by which a regress to the original flaw is effected. I am not acquainted with the technique of analysis; from Freud's account it seems to be a treatment of the mind by which it

is allowed free play in the hope that in this freedom it may furnish some clue to the secret of its unconscious. If the criticism which was previously made of Freud's psychology was correct, this may be interpreted in the following manner: the mind is allowed freely to lapse into lower categories in some of which it had begun but not completed intellectual progresses. As the mind reaches any category in which this happened, it must resume the progress. (Such progresses need not be of dialectical nature, that is, from lower to higher category; they may be a movement from one term to another in the same category.) Thus, guided or unguided, the mind may reach the category in which the origin of the neurosis lay. If this category is known to the healer, then the terms with which the mind operates in it can be stripped of what is irrelevant to them so long as they are treated as terms of a higher category ("the symbols are interpreted"); and from them that part of the category which is looked for, namely, the cause of the neurosis, may be inferred.

When that category has been reached in which the neurosis occurs the search for its beginning is made in a manner which probably is strictly scientific. It seems justifiable to assume that, in a category where the discovery is reached by a series of words one of which suggests the next, there the words are related in such a manner that one logically implies the next; but I do not think that this can be demonstrated, since logical implication in a low category relates poorer terms, and relates them in a less valid manner, than does logical implication in a high category; and, although it may be possible to give formal descriptions of low categories, it seems impossible fully to account for their content. The patient does not know in what category he is moving; the healer is in a higher category, and this difference constitutes a great difficulty, but not the greatest.

It remains now to persuade the patient that the inference is true, and, by implication, that he has been guilty of falsehood; the healer becomes not *παιδους δημιουργός* but *ζληθείας δημιουργός*; it is his task to make acceptable the truth which before was unacceptable. He does not always succeed, for, being human, he is involved in errors himself, when he engages untruth, the power of which in his patient may be invincible by what arguments he commands; but if he succeeds, the despairing question

"Canst thou minister to a mind diseased,

"Pluck from the memory some rooted sorrow?"

is given its answer.

Much has been done when this stage has been reached, and much remains to do. The conflict, before which the patient originally succumbed, has been reconstituted for him, and has been reconstituted explicitly, but it has not been solved. But, with the assistance which now stands by his side, he may resume the struggle with better hope of success. At this point the process of sublimation is, I think, of capital importance. Freud<sup>7</sup> describes it as follows:—"It consists in this, that sexual desire surrenders its object which aimed at partial or reproductive pleasure, and takes up another, which is genetically connected with that which has been surrendered, but must itself be called, not sexual, but social. We call this process Sublimation." It should be noted that Freud does not assert that it functions in the solution of struggle, but only that it is one aid against neuroses among others; and that he does speak of Sublimation as regulating sexual impulse; whereas it seems to me that its definition may well be extended so that it means the process by which any mental struggle is allayed, and that it is the only cure of such a struggle.

The struggle is between desire and either duty or necessity. The mere negation of one term sets an end to the

<sup>7</sup>*Vorlesungen*, p. 398.

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struggle indeed, but it is not a valid solution. For it has already been shown how the denial of desire leads to neurosis, a new evil instead of an old, the origin of which being detected the mind must once more face the old problem, which, by itself, it is not more likely to solve now than before. And it is impossible to escape from either necessity or duty; for, although it is very easy to neglect duty, the fact of a neglected duty remains registered in the mind, where it must produce effects as inevitably as does the denial of desire, although in a different manner, as I shall try to show later. And also it is impossible to compromise; for although by compromise the intensity of the struggle may be reduced, yet the struggle, as such, remains, and what has been gained is this, that a conflict which perhaps was noble has become ignoble.

Here then there is a system which also is a discord; since neither of the discordant terms can be removed, nor an agreement be effected between them, it may perhaps be worth while to attempt to add a synthesis to them, which, coming later, shall justify what went before, as the Hegelian synthesis, following logically, and not chronologically, while transcending absorbs its antecedents, thesis and antithesis. This should be the true Sublimation. The method by which it is reached is not logical, and seems difficult to describe; an attempt to describe it must now be made.

Hegel reminds us<sup>8</sup> that the syllogism—All men are mortal—Caius is a man—Therefore Caius is mortal—is vicious, since the validity of the major premise depends upon the truth of the conclusion. But it seems most important to add that, although the syllogism is not valid as a method of proof, yet, once the syllogism is posited, it constitutes a system which is valid in so far as it contains no contradiction and is significant because it establishes cer-

<sup>8</sup>*Greater Logic*, ed Lasson, Vol. II, pp. 335-6.



tain relations between the terms mortality, men, and Caius. The process of thus constructing a syllogism cannot then be undertaken by reason; and it is not, in fact, constructed, but is posited in its complexity, and, when so posited, is seen to have a certain beauty even if no practical usefulness. This positing seems to me to be the purest but not the most important or interesting example of the synthetizing operation of mind.

This operation effects more important things when it creates a work of art. Such a work consists of parts, each of which is determined by the other parts. But if each part is determined only in this manner, then the whole system, being a reflection of nothing into nothing, collapses into non-existence. Each part therefore must have a content; that is (since the part is nothing but its content) it must somehow have an independent meaning. And reason cannot effect a reconciliation of this apparent contradiction, nor can it by any of its peculiar processes establish any one part of the whole work from which the others may be deduced; for each part already implies the others. But works of art are created; and, having been created, they are seen to be valid<sup>9</sup> systems in which each part is now perceived to be correctly placed. The whole is related to the parts as prius; and as soon as it is given in its completeness, criticizing reason can operate upon each part; and the whole system is extremely intelligible and reasonable, but also more than this. It has already been shown that it cannot be produced by reason; and it seems better to call it the product, not of that "happy guess" as which

<sup>9</sup>It is not asserted that they are perfectly valid. It may be presumed that perfect validity belongs only to the whole reality. But whatever validity a work of art possesses it possesses by virtue of the fact that it is an imitation of reality. The same apparent contradiction as that which affects the parts of a work of art, also affects the entities out of which Hegel probably thought reality to consist: the more intense the relation between them, the more perfect their individuality. If these entities are personal, the contradiction is less real than it is in a work of art; perhaps because a work of art is the result of finite intelligence and therefore incomplete.

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Mr. Chesterton defines genius, but of the synthetizing activity of mind.

It is now suggested that an operation similar to this puts an end to struggle, and is the true Sublimation.

The struggle may be considered from the intellectual and from the ethical side. When it is considered from the intellectual side the difficulty is this, that an attempt, apparently hopeless, must be made to understand the conflict, to give it meaning and significance. (Even in physical pain part at least of the distress which is felt is due, I think, to a bewilderment; and the pain would be relieved if it were found possible to give it a place in an intelligible view of the world.) But reason cannot give such understanding, for it holds apart as two separate and irreconcilable terms the individual and his world. When the struggle is considered from the ethical side, the difficulty is, that it seems impossible to leave it behind. To abandon those dear delights of which it is demanded that they shall be abandoned; even to let go the familiar wretchedness, which seems to give a warrant to pride for railing at necessity: this seems like death to the mind. If only it were possible for me, so it is argued, to reach that state where this surrender would be known to be justified, then I might make the surrender. But I cannot surrender without justification, and justification is not achieved until the surrender is made. Thus the mind oscillates, and is helpless. There is only one escape from this dilemma, which is, to forget happiness altogether; and to understand (where the conflict is intellectual) that not happiness but understanding matters to the mind; or (where the conflict is ethical) to achieve that resignation which is not only passive submission or negation, but an active assumption of a new state, which state is nothing else than a state of profounder experience.<sup>10</sup>

<sup>10</sup>The fear of the Lord is the beginning of wisdom: but the end of wisdom is the love of the Lord.

A higher category has been achieved, in which it is understood that the value of the struggle was to enrich and erect the mind; this is its justification, and its meaning; now the new wisdom would not be exchanged for the old happiness; this wisdom is a greater happiness itself. The conflict has been allayed, and not only by a process of reasoning; it has been resolved by synthesis (in its logical aspect) or by sublimation (in its practical aspect);<sup>11</sup> a synthesis which contains both terms of the conflict; both evil—which has now become the object of an understanding and not of a suffering mind; and consciousness, conscious no longer of a hostile outer world, but of one which now is more truly part of itself.

In great minds the struggle will be experienced as something more than private; the evil which they feel is the evil of the world. This experience is expressed in tragedy. And tragedy already implies the need for some further advance in the progress of understanding. For the world of tragedy is not altogether evil; tragedy describes the ruin of good, and the greater the triumph of evil appears to be, the greater must be the good which perishes: it is not the mere negation of good, for a world entirely evil is merely incomprehensible and chaotic. There is defeat here; but to the feeling of exaltation which tragedy arouses defeat is only partly relevant; partly that feeling is caused by the struggle which precedes defeat. But equally tragedy does

<sup>11</sup>If this account is correct, then the connection between *πάθος* and *μάθος* signifies, not that men acquire useful knowledge by trouble, but that suffering is the necessary antecedent of wisdom. The immediacy of understanding which is reached through resignation is recorded in the book of Job, Ch. XLII, 5: "I have heard of thee by the hearing of the ear, but now mine eye seeth thee." The indirect speech of reason has become superfluous and ineffective, having been supplanted by knowledge, which, although mediated in a former state of unreflecting happiness and by suffering (thesis and antithesis) is in itself immediate. The enumeration of numerically doubled riches, with which the Book closes seems designed to mark these riches with indifference, whence it may be concluded that the wealth which Job had gained in truth lay within him and not outside.

not give perfect satisfaction: where evil finally prevails, there is not only exaltation but also despair.<sup>12</sup>

Thus tragedy is formally the antecedent of a form of art which expresses a complete understanding of evil. But also the artistic effect in itself is a first attempt to sublimate sorrow. For it is an attempt to make evil intelligible by making necessity intelligible, so that it shall be possible to submit the private sorrow to law.

Some of the greatest have reached the end of this process and, before they died, have left their record about the end in such works as the *Oedipus Coloneus*, *The Tempest*,<sup>13</sup> *Samson Agonistes*, and certain passages of the second part of *Faust*. Here satisfaction is complete. These works seem to be marred by something mystical; perhaps this is caused by insufficient understanding in the reader, who is merely presented with the appearance of reconciliation; reason (as has already been said) cannot explain synthesis; but, if once understanding has been attained, the element of mysticism vanishes.

The attempt to sublimate sorrow ends, then, with this, that a view of reality is achieved which is tragic in so far as the struggle is posited but not allayed, and harmonious in so far as the struggle is transcended and understanding reached. And it seems that this is the manner in which the operation of art should be explained in Hegelian principles. With this Freud's explanation<sup>14</sup> must be compared.

The artist elaborates his day-dreams, he says, until they

<sup>12</sup>Death is the conventional characteristic of tragedy. But it is necessary to distinguish such tragedies as contain a final reconciliation (like the Ajax) from those which do not (like Hamlet). Of these two, the former does not fall within the class of tragedy, if the above description of tragedy is accepted.

<sup>13</sup>*The Tempest* is the very negation of the supernatural if supernatural is taken to mean that which operates as an unknown force upon the known. The truly supernatural forces which are shown at work here are wisdom and love, sufficient to give goodness and grace to men who without them are of the world of common clay; the miracle lies in the synthetic nature and power of these two. If it is true that Shakespeare thought that he had no more to say after he had written *The Tempest*, this was because he had reached complete understanding, and not because he had exhausted himself.

<sup>14</sup>*Vorlesungen*, pp. 435-7.

lose that personal element which repels others. It is true that he elaborates; but he does so because a day-dream is, much like the dreams of sleep, full of difficulties, contradictions, impossible positions which, if they are reflected upon, must be removed. The process is one, not of simple subtraction or substitution, but of harmonizing. The personal element is removed only in so far as the self is brought into a more valid relation with the rest of reality; the particular self as such is subordinated in a system and is no longer uncontrolled; but this subordination is not a masking of the poet's self. In many tragedies no secret of the mind is left unrevealed; and, although this mind may be the mind of the hero, it is a particular mind, and it is not clear why the reader should find its secrets more acceptable than the display of the author's secrets under his own name. Next it is said that the poet disguises his day-dreams, so that they do not betray their tainted source. This is a merely practical measure, not brought about by any logical necessity; but, if the day-dream, under the scrutiny of intelligence is changed into the more valid form of drama, then this change is a necessary change. And a process is described correctly and significantly when it is explained by a law and not when it is described by a contingent characteristic. Finally it is said that the poet possesses the miraculous power of forming a given material until it becomes the copy of his imaginations. This seems to be a misstatement; there is a relation of similarity between the original image and the finished work of art, but it does not seem that the relation is at all like that which subsists between original and copy. This is a question of fact. Freud concludes by saying that the artist thus enables others to obtain consolation, and, through their gratitude, achieves that the lack of which set him on the way which led him to produce his works—honours, power, and the love of women. But, if the evolution of the work of

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art is a dialectic process, then these advantages must be merely accidental; for they are implied in an account of the work of art which has different presuppositions; and they are not implied in the process, which is an attempt at understanding, first a private struggle, and thence the sorrow of the world. The achievement of this understanding is expressed in the work of art; and to the understanding mind those ministers of happiness have been proved irrelevancies. Thus it seems to me that Freud is right in his account of the subjective origin of works of art, and in his view that their creation gives realities, otherwise unattainable, to the creator; and he seems to be wrong in disregarding the logic which controls subjectivity, and in his view of the reality which the labour of thought renders intelligible.

It is easy to explain why Freud does not see that the relation between the work of art and the state of struggle is that between higher and lower category. The purpose of his technique is to find the cause, namely, the conflict. For often the process of analysis reaches a stage "where the doctor must tactfully withdraw;" he may indeed give help, but not professional help. And indeed the cure is effected by the synthetic operation of intellect striving with conflict. The movement which now begins is a logical movement; and it may lead to the perception and expression of beauty,<sup>15</sup> or to beauty of conduct, as I have tried to show. Freud necessarily neglects the logical aspect both of conflict and of its sublimation; and therefore, when he perceives how the mind is eased of its burden by the creation of a work of art, his explanation is merely contingent, and also assumes a state of facts (with regard to the success of the artist) which does not agree with experience.

<sup>15</sup>"Our sweetest songs are those which tell of saddest thought."

## III

But all art and rightness of living are not reached through sorrow; there are those who are so justly constituted that evil never is presented to them. Their courage is not the courage of Luther saying, "Here stand I, I cannot otherwise;" this is a courage which has known and has overcome fear; but these, although they know danger and pain, have never felt the coward moving within them, and restraining them. They have humility; not because, being mortal, they have learnt to think as it befits mortals, but because they are so harmoniously related to others that without struggle and by immediate intuition they know their human place in the order of things. This is an attitude of mind which determines much more than the relation to other men; but it is most obviously manifested in this relation, where it is found to exclude both submissiveness and pride, and to imply the power both to command and to obey rightly. Such minds in their perfection, time cannot corrupt; but, in the world of contingency, it happens that there are many who in their beginning presented the appearance of such perfection until time discovered their weakness. Therefore it was said that, Whom the gods love die young; and that youth is the part of life which lies before the time when to rejoice and to grieve is learned.<sup>16</sup> The intellectual state of these minds is such that they are capable of faith, which implies that doubt has never arisen. It seems to me that such a mind is peculiarly Christian; and that it illustrates the saying about little children, that of such is the Kingdom of God.

From what has been said it follows that this uncorrupted state is contingent; some may complete life having never known defeat through those experiences which in others would cause fear, pain or sorrow; it is not demonstrable that they must reach the end in this state, which is

<sup>16</sup> *Ajax*, pp. 552-559.

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characteristic only of youth.—And it seems to me that the nature of the growing mind of man is such as to admit and even to imply all these evils, and others; "horror and scorn and hate and fear and indignation."

This close connection between growing human intelligence and human evils was known to the writer of Genesis; and the importance which he believed it to have may be inferred from the place which he gave to the story of the Fall at the beginnings of human life. The knowledge which the tree gave was finite; it showed man the external world and himself in it, but it left him to reconcile by his own skill the discord which the cognition of externality implies. Man walks upright, and the children of men are brought forth in sorrow; he has tried to conquer nature, and he eats bread in the sweat of his face; he reasons about his actions, and he has lost innocence and knows shame. The beasts are without this good and this evil;<sup>17</sup> finite intelligence seems to be peculiar to man; a condition where every effort, as soon as it is made, is faced with its opposite. The world of man is the world of struggle, and it is a real world, for contradiction is a characteristic of reality as it is presented to us in ordinary life. Its president is the fear of death,<sup>18</sup> which cuts short an unresolved struggle, miserable while it lasted, and charges with meaninglessness the life which it ends. This is the antithesis of youth, the sphere of finite consciousness.

But it is impossible not to pass beyond contradiction. Knowledge of good and evil implies conscience, to which Freud gives the austere name of Censor. Through it the struggle gains significance, and by virtue of it (as was suggested above) is of greater validity than happiness, for it relates individual life to something absolute. Next, if the state where experience counts is compared with that in

<sup>17</sup>Non licuit thalami expertem sine crimine vitam degere more ferae talis nec tangere curas. *Aeneid*, IV,550-1.

<sup>18</sup>*Genesis*, ii. 17.

which happiness counts, it appears that these two states imply different views about time. The excellence of the latter state is determined by a mere summation; that of the former, by the arrangement of its constituent terms; that is each mental state is determined by the mental states which preceded it.

If this view is correct, a substitute has been found for the bad infinity of formal time. A temporally unending life seems to be an undemonstrated assumption; but it does not seem impossible so to conduct life as to make it infinite in the Hegelian sense. Such is the life where every struggle has been resolved; the end, whenever it comes, finishes a process which, by being ended, is perfected. And further it seems that the truthful and the untruthful life, at the end, meet justice. It may appear indeed that every truth may be denied and every wrong asserted to be right, in word or by action, to the end; and that unbearable pain may be the end of consciousness for those who struggle to live truthfully without remission; but this is an immature reflection. For death is not immediate; it can be attained only after the will has failed; and it must fail, for it looks to the future; but now, by hypothesis, there is none. At this precise moment therefore the past is presented as it was by conscience, incorruptible and unperverted by the will to deny reality. It is not the reflection upon the past, but the past itself, which determines the end, and cuts short unresolved contradictions and a merely quantitative extent of life.

The attempt was made to show above that a negation of fact vitiates all processes based upon this negation; in the category of psychology, it led to neurosis. This negation can be upheld only by an effort, and, as death approaches, this effort must relax; the moment of death must be a realization of the victory of whatever evil was embraced by the denial of truth or avoided by the neglect of duty. In this sense eternal death is the wages of sin.

But, where truth has been acknowledged, the end must be different. Whatever suffering may have appeared to mar life, when the end is reached it is past. Life has had significance because it has been accepted; and, although not eternally prolonged, it is formally infinite, because it contains no unresolved discord; and death becomes equally acceptable whether it puts a harmonious end to pain and sorrow, or cuts short an achieved serenity whose temporal extension is indifferent.

By the last moment the whole life is justified or not; but also the whole life goes towards the making of the last moment; and the last moment is the last term of a practical dialectic process, so that any objections based upon the mere duration of the final term are invalid.<sup>19</sup> But it is necessary that there should be a final term: the sorrow and happiness of life must achieve a meaning, and life itself must attain the perfection of its form, in death.

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<sup>19</sup>"Perhaps all the wisdom, and all truth and all sincerity, are just compressed into that inappreciable moment of time in which we step over the threshold of the invisible". Conrad, in *Heart of Darkness*. This passage, and that which precedes it, with the last words of Kurtz—"The horror! The horror!"—seems to me a convincing statement, in the form of art, of what I have attempted to state in the form of demonstration

## NICHOLAS ORESME'S LIVRE DE DIVINACION

A PRECISE statement of the opinions of Nicholas Oresme on the claims of Astrology, and of those arts and sciences which in mediaeval thought were grouped therewith, is of prime importance as a prelude to fruitful enquiry into the origins and growth of "effective scepticism" in the fifteenth century and onwards.

This proposition finds much support from consideration both of the date at which Oresme wrote and of the capacities and personality of the man himself. His *Livre De Divinacion*<sup>2</sup> which we propose to use as text for analysis and definition of his attitude towards the occult sciences, and science in general, was written between 1361 and 1364; the whole of its author's literary production belongs to the period before the outbreak of the great Schism of the West, which, super-imposing the new problem of the healing of the Schism on to the existing one of the reform of the Church, was to divert the main stream of mental energy for forty years. The Schism, indeed, stands as a watershed separating an age in which reconstruction had appeared imperative from one in which revo-

<sup>1</sup>See Thorndike, *A History of Magic and Experimental Science*, 1923, Vol. II, p. 970, and the possibilities there suggested of tracing the growth of efficient scepticism from Oresme onwards.

<sup>2</sup>Bibliothèque Nationale, MSS. français, No. 1350, ff. 39-61; "velin, dessins, lettres ornées, XVe siècle." The first portion of the volume is occupied by Oresme's work on the Sphere. The *Livre De Divinacion* covers 91 columns. The following MSS. of the Bib. Nat. have also been used: Fr. 19951, ff. 1-31, *Livre De Divinacion*; Fr. N. A. 1052, ff. 1-38, *Lespere*; Fr. 2240, ff. 61-91, *Lespere*; Fr. 565, ff. 1-23, *Lespere*, and ff. 23-168, *Le Ciel et Le Monde*, (translated by Oresme from Aristotle); Fr. 1348, *Quadripartyt de Pitholomee*, (translation ascribed to Oresme).

lution became inevitable, in which essentially mediaeval theories of society, on which the large bulk of intellectual production continued to be based, seem to us more and more anachronistic as the fifteenth century progresses. Although it is true that mediaeval civilization may be said to have spoken its last word and made its effective contribution to the sum of human thought long before 1378, yet for the purpose of our enquiry it is important to note that the great constructive phase of the 12th and 13th centuries was followed by an age, which, while not on the whole constructive or original, did offer a contribution of a special and limited kind. Its characteristic aspect was a movement of re-editing, so to speak, and of vulgarisation, which intensified as the 14th century advanced until it reached its height, in France, under the active encouragement of Charles V.<sup>3</sup> Oresme's work, then, takes its place as part of a great body of literature in the common tongue in which the men of his generation issue to the lay world what they think important among the works of their predecessors; which may be taken as representing, in various provinces of thought, the limits of advance possible to the mediaeval civilization with the apparatus in its possession and with the limitations of authority and method within which it felt free to act. It is the considered opinion of the mediaeval world after the opportunity of more than a century for remanipulation and reflection and as such offers a useful standard by which to gauge later progress.

Nicholas Oresme was born c. 1320, probably in Normandy, entered the College of Navarre in 1348, and was Grand Master and Professor of Theology therein from 1356 to 1361 when he accepted the Deanship of Rouen. He showed some human weakness in refusing to relinquish his university office until compelled to abandon his claim

<sup>3</sup>For details of the activity of the French translators of the 14th century see Delisle, *Recherches sur La Librairie de Charles V*, Paris, 1907.

by a decision of the Parliament of Paris. In 1378, perhaps as reward for his translation of Aristotle's works into French, in which Charles V took so ardent an interest, he was given the Bishopric of Lisieux and died holding that office in 1382. His literary activity falls into two easily defined sections. That covered by his stay at the College of Navarre may conveniently be called his Latin period; in it his productions included works on judicial astronomy, on physical science, on the sphere, and, of course, on theology, along with the work by which he is perhaps best known in modern times, his treatise on money. At Rouen followed his French period in which he turned into the tongue of the layman the substance of some of his earlier writings on astrology and the treatise on money, and carried to an end the great task of the translation of the *Ethics*, *Economics*, and *Politics* of Aristotle into French. To these years belongs also the remarkable advent sermon preached before Urban V at Avignon in December of 1363. It may be added that Oresme has shared the common lot of the writers of his age in having attributed to him the authorship of the *Somnium Viridarii*.

On the side of sagacity, intellectual power, and equipment with the apparatus of scholarship as it existed in his day, his fitness to be accepted as witness for the expiring middle ages is undoubted. In his economic treatise he anticipated the theories of Copernicus and Gresham and showed a clear conception of the history of money and of its function in the commonwealth, along with extraordinary boldness in criticism of contemporary abuses, in the shape of debasement of the coinage. His works on physical science justify the description of him by Picus da Mirandola as *philosophus acutissimus et peritissimus mathematicus*. In his French version of Aristotle, however imperfect from the standpoint of modern scholarship, we find clear expression of difficult ideas in an imperfect medium and

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again much shrewd comment on the institutions of his time and on government in general. Finally he possessed, to an extent unusual among scholars, the power of lucid exposition for the unlearned; we may cite, in particular evidence of this, his little work on the Sphere, in which he summarizes what his generation knew of the physical universe. In fine, then, we have to do with a mind that would have been eminent in any age in enquiry demanding native power, balance, and capacity for accurate analysis. With this we have to record the important fact that he is, in religious belief, orthodox, and in that essential representative. His limitations will appear from examination of the content of his book against divination.

Before proceeding to allow Oresme to testify for himself and his age it may be noted that Meunier (1857) and Jourdain (1888) have dealt with him and his work and, in the case of the latter, more particularly with his views on astrology. It is a defect, however, in Jourdain's study that a general attitude of condemnation towards the occult sciences is assumed on the part of our author, without close analysis of what exactly he accepted and rejected, and, above all, of his grounds for so doing; nor is any attempt made to present a sum-total of Oresme's beliefs and methods.<sup>3a</sup>

On the general question of the prevalence of superstition in the 14th and 15th centuries little need be said. Without giving too much weight to the evidence furnished by the somewhat misleading titles of the books in the great library of Charles V the most significant indications may be briefly exemplified. Thus, such men as Oresme and Gerson thought it urgent to write in condemnation of the

<sup>3a</sup>See Fr. Meunier, *Essai sur la Vie et les Oeuvres de Nicole Oresme*, Paris, 1857; Ch. Jourdain, *Nicolas Oresme et les astrologues de la Cour de Charles V*, *Revue des Questions Historiques*, 1875; P. Feret, *La Faculté de Théologie de Paris*, III, 1896; E. Bridrey, *La Théorie de la Monnaie au XIV<sup>e</sup> Siècle: Nicole Oresme*, Paris, 1906.



superstition that existed in the highest places; Gerson addresses to the medical graduates of Paris a solemn warning against the use of spells and the belief in the special virtues of certain days for the purpose of medical treatment.<sup>4</sup> Pierre d'Ailly is strong against astrology but we find plainly set forth in his works his own waverings on the question of the influence of the planets on the formation of the great religious sects;<sup>5</sup> and as the limit of credulity and misapplied energy on the part of the learned we have the stupidities of Oresme's contemporary John of Legnano, Professor of Law at Bologna, friend and adviser of Popes, as included in his *De Bello*, and in his *Somnium*. We may safely argue to gross superstition on the part of the upper classes of the laity; the populace was, as always, of quite instinctive and primitive belief in these matters.

We proceed to review the contents of the *Livre De Divinacion*, not attempting to present in detail Oresme's treatment, but to select such aspects of it as we believe significant, as contributing to a clear conception of the place he occupies in the history of science and scientific method.

The *Livre De Divinacion*, so named, as Oresme tells us, after Cicero's *De divinatione*, contains seventeen chapters which may be thus classified. The first four, descriptive and general, sketch the intention and plan of the work; three chapters, setting out the arguments *pro*, that is, in favor of belief in the efficacy of the divinatory arts, are followed by three devoted to arguments *contra* drawn from experience, authority, and reason. The next three chapters, 11, 12, 13, deal somewhat miscellaneous with the lack of certainty in the attempts of these arts to forecast the future, the deception which they in-

<sup>4</sup>In 1389. Cf. his *Tractatus de erroribus circa artem magicam et articulis reprobatis*, in *Opera*, Vol. I, col. 210.

<sup>5</sup>In his *Tractatus contra Astronomos*, c. g., cap. VII.

volve, and the fitting attitude of princes towards them. In three chapters the arguments *pro* are countered, and the last chapter contains the recapitulation and conclusion. The method employed is plainly that commonly known as the scholastic, applied here with a certain looseness, perhaps justified in the writer's eyes by the nature of the audience to which the book was addressed, that is, the lay world. It is my intention, says Oresme, to show from experience, authority and reason, that it is foolish, wicked, and dangerous temporally, to set oneself to know future events and hidden things by means of astrology, gromancy, or any other such arts, and further that it is most perilous of all to those of high estate to whom appertains the rule of the body politic.

His analysis of Astrology which follows<sup>6</sup> establishes for us his main position, shows, in broad outline at least, what he accepts, and what he rejects, with some indication of his grounds therefor. Astrology has six chief parts:—The first enquires into the movements, signs and measurements of the heavenly bodies, so that tables may be constructed which may foretell future movements of constellations, eclipses, and similar phenomena. Astrology, thus defined, is a speculative and mathematical science, but it cannot be considered an exact one. The second deals with the influences and *natural* powers of the same bodies. Thus a star in one quarter of the heavens signifies or has power to cause heat or cold, drought or rain. This division of astrology is also a great science and knowledge therein is possible, but we know too little about it; what is set down in the books is lacking in proof; what was true for particular times and places need not hold good here and now. The third part of astrology covers the revolutions of the stars and the conjunctions of the planets. This knowledge is applied to three kinds of judgments (predictions) in which

<sup>6</sup>*Livre De Divinacion*, Cap. 1, 2.

we attempt (a) To predict from observation of the conjunctions of the planets the great terrestrial events, pestilences, mortalities, famines, floods, great wars, the fall of empires and the like. These matters can be sufficiently well known but only in general terms; we cannot know in what country or to what persons, or under what conditions these things will happen. (b) To know the weather and its changes, winds, storms, etc. Here knowledge is possible, but not accuracy, and farmers and sailors are often better prophets than astronomers. (c) To know the humours of the body, when to take medicines, and so on. In this respect something may be known so far as the effect of the sun and moon is concerned, but beyond that, nothing.

To this point he has been dealing with *natural* influences and effects; he passes next to the fourth division of astrology which is concerned with nativities and attempts to predict man's future from the position of constellations at the time of his birth. It is possible thus to ascertain a man's complexion and inclination but not his fortune, or those events which may be hindered or prevented by the exercise of the human will. At this stage we may consider that Oresme draws a line separating those parts of astrology in which he has a more or less qualified belief from those to which his attitude is one of complete incredulity. The fifth division of astrology attempts to answer various questions from consideration of the arrangement of the heavens at the moment the question is asked. The sixth is concerned with elections or choices, as in the case of the appropriate time for beginning a journey, changing a garment, etc. These two parts of the science have no basis in reason. A long string of practices and claims<sup>7</sup> is next dismissed in the same emphatic terms as are the fifth and sixth divisions of the science, with an exception made

<sup>7</sup>*Op. cit.*, cap. 3, and cap. 11.

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for palmistry.<sup>8</sup> This science he considers to be a part of philosophy and it may have some basis of truth in so far as it indicates the complexion or inclination but not when it attempts to particularize; many of the rules to be found in the manuals are false.

Without comment on the position here revealed we may next glean from Oresme's detailed treatment of his subject as thus classified, such clues to his beliefs, reasons, and methods as are pertinent to our general purpose. We take his own order of authority, experience, and human reason, though it must be confessed that in the *LIVRE* itself a rigid separation between these is scarcely adhered to. Although he expressly disclaims the necessity for complete knowledge of the history of the practices he condemns yet he follows tradition in presenting an imposing series of references to authorities both pagan and Christian, mentioning indeed, beside the Scriptures and the Decretals, no fewer than forty-eight writers or works.<sup>9</sup> In general it may be said, so far as we have verified these, that they are without the secondhandedness often concealed in mediaeval writers by such parade of learning, though there is little to distinguish the use made of them from the customary practice of the mediaeval world. We may select certain points as typical. The first is the stress laid on the real reason for the award to the Israelites of the promised land. It was not on account of their own "justice" but plainly and clearly because of the iniquities of the inhabitants as shown in their abominable practices; "and certainly the man who considers this text, so ancient, so approved, received by all Christians, Saracens, and Jews, must have great horror of meddling with divination."<sup>10</sup> Further it is significant that Oresme should seriously cite St. Isidore

<sup>8</sup>Cap. 3.

<sup>9</sup>These do not all occur under the heading "authority" but at every turn.

<sup>10</sup>C. 9.

as an authority.<sup>11</sup> On the other hand we may credit him with some measure of discrimination. Replying to arguments drawn from the recorded knowledge of princes of old time in these matters, we read, "There have been many who knew much less of these things than has been attributed to them, there has been exaggeration so as to give honour to the prince and the science, and they did not write the works that have been credited to them. The *Almagest* was not written by Ptolemy, King of Egypt, but by another of the same name, just as the books attributed to Solomon and Hermes were so named to increase their authority; in the case of Alphonse of Spain his name was given to a work composed by men acting under his orders; the book of secrets was not written by Aristotle, *ne il n'avoit telle maniere de parler comme il a en ce livre qui nest pas de grant auctorite et que Aristote ne fist pas.*"<sup>12</sup> The general conclusion to be drawn from the Scriptures, saints, and doctors, is that such methods of penetration into the unknown are sinful; from the pagan writers, that they accord ill with the prosperity of the state and its citizens.

Passing to the deductions to be drawn from "experience" Oresme in his review of the fates of men and empires shows wide reading and much understanding without departing from a well beaten track. The apparently approved and profitable use of the occult arts by leading personages of the Old Testament and of profane history is examined, and it is demonstrated that the use of these arts did not bring prosperity, or, alternatively, that they were not practiced as alleged, or, alternatively again, that they may have been used by special divine permission. Against such instances can be set the dismal fate of a long line of worthies from Zoroaster and Nectanebus down to Ferrand, Count of Flanders, James, King of Majorca, and others

<sup>11</sup>C. 9, C. 15.

<sup>12</sup>C. 14.

near to the writer's own day.<sup>13</sup> Generally it appears as if fortune had fought against all these men but in reality they were punished by God for attempting to invade regions of nature, or of the future, which are closed to man's knowledge.<sup>14</sup> This style of argument is familiar enough to readers of mediaeval speculation in these fields of thought but there are important incidental admissions which help us to formulate Oresme's creed. He clearly accepts the existence of magic and magical practices.<sup>15</sup> The occult arts have driven men out of their senses and madmen are peculiarly susceptible to them.<sup>16</sup> People thus distraught by illness or by magic art may see the absent or the future although their visions are often false, or obscure, and certainly dangerous of acceptance. Diviners, when they doubt the fulfilment of their prophecy, bring it to pass by other means, by treason, fraud, necromancy, or otherwise. Again some may have visions in dreams, or because they are "*arreptices*" or "*epileutiques*" or demoniacs, or because they aid themselves by magic; and often things turn out as they have foretold and they pretend to have known them by revelation from God, or by astronomy, or by other lawful means, as Mahomet did.<sup>17</sup> Oresme accepts, too, the possibilities of alchemy. When the alchemist succeeds once or twice in making gold he is afterwards so drawn to his art that he cannot forsake its exercise and ruins himself thereby. And as the alchemist comes to grief when trying to penetrate the secrets of nature so does the astrologer when attempting to lift the veil which hides fortune from us; both are moved to these things by the craft of the devil. The only legitimate way to discovery is by divine revelation, or by the use of reason, or by such visions and powers

<sup>13</sup>C. 8.<sup>14</sup>C. 8.<sup>15</sup>*See* q. C. 12, C. 15.<sup>16</sup>C. 11.<sup>17</sup>C. 12.

of proph cy as come to those of sober and peaceful life, whose soul is "*aussi comme un vray miroir cler et resplendissant, asprete de cogitations mondaines*".<sup>18</sup> Animals such as the swan, the owl, the halcyon, the dolphin, and the war-horse, have foreknowledge of the future<sup>19</sup> but man, provided at birth with no knowledge except of how to weep, has been endowed with reason which enables him to provide for good or evil hap.<sup>20</sup> As regards weather prophecy, it is better to study profoundly astronomy, or, better still, the mutations of the air, than to rely on diviners. The power of suggestion is accepted and stressed; enquiries into the future may not only be a sign of bad fortune but the cause of it. A favourable reply causes a man to go too rashly, impetuously, and madly into an enterprise; if the response is unfavourable then a hesitating advance may in itself be the cause of failure; the recipient attempts his task "*comme chancellant et clochant de mauvais esmouvement*";<sup>21</sup> many have come to evil fate because they feared the fates.

We present next the gist of those arguments used by Oresme which appear to him to fall under the description of "human reason". We may quote first his general statement that to prove his thesis as to the falsity of the claims of the astrologers and diviners it is quite unnecessary to know perfectly all their sciences, any more than one needs to hesitate to condemn, without complete knowledge of them, such games as "tables" and dice; reasoning from general principles suffices.<sup>22</sup> Then, according to Aristotle, fortune is a natural inclination to good or bad luck which is independent of either good or bad advice, and the tendency of the individual in this respect can be ascertained only from the manifested results, and cannot be known

<sup>18</sup>C. 11.<sup>19</sup>C. 16.<sup>20</sup>C. 15.<sup>21</sup>C. 10.

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before those results have been observed. Even if it were possible to know fortune beforehand yet such knowledge could be only of general tendencies and could be of no service with regard to particular effects, so that it is a great waste to devote energy to the matter. Similarly if we consider the four passions which make up "courage", that is, joy, sadness, hope, and fear, and remember that other things being equal, where there is more passion there is less reason; and where reason is lacking more is left to chance; then we may conclude as to the peril of practices which tend to increase the aforesaid passions and leave less to the control of reason.<sup>22</sup> The familiar dilemma as to free will and necessity is emphasized; if what is predicted cannot be hindered why trouble to know it; and if it can be hindered then it cannot be said to be known beforehand. All the books of predictions show that their authors believe in necessity though they often allege the contrary. Again many of the rules of judicial astrology are based on fable, poetry, and rhetoric, which cannot be accepted in natural science; this applies especially to the whole business of the shapes and names of the constellations. Poets have pretended that good princes were changed into stars, just as old women to-day speak of the "*bourdon St. Martin*" and call the Milky Way the "*chemin St. Jacques*". The old names were given to the constellations simply as a matter of convenience for purposes of reference and identification, and names of persons were used only because many of the constellations had no shape which justified the bestowal of such names as the Plough, the Crown, etc. Yet many of the rules of judicial astrology are based on these names or on the qualities to be inferred from them; as for instance the idea that a man born under the Ram will be liberal because the sheep parts willingly with its fleece; if he is born

<sup>22</sup>C. 4.<sup>23</sup>C. 10.

under the Bull he will be a tiller of the ground, and "*semblable truffes*". It is useless to say more of this because the man who is open to believe it is without reason; if he understands reason he need only consider the matter for himself. In somewhat marked contrast to these views we meet apparent approval of the opinion ascribed to Ptolemy that those who live towards the south are more apt for the acquisition of astrological knowledge than those inhabiting the regions towards the north, and, similarly, Haly says that the people of the east are equally favoured in comparison with those of the west. And it seems to Oresme to be "*selon raison*" that those should have little benefit from judicial astrology who are not inclined thereto by nature, so that it would appear that Frenchmen, and still more Englishmen, and those living beyond them towards the northern and western confines of the world, can have little advantage from these studies.<sup>24</sup> Further it is a great mockery and abuse of reason to believe that an astrologer should by his art make accurate forecast of matters which are under the control of the changeable human will, while, at the same time, they are unable to tell us what tomorrow's weather will be, or prophecy a change of the wind. Yet these latter phenomena follow exactly the influences of the heavens and cannot be altered except by divine miracle. In general we may presume that men should act on Seneca's saying, "I know not what the future may bring; I do know that it is wise to despair of nothing, to use good counsel, and to be prepared for all."<sup>25</sup> The men whom princes should honour are those true students who make careful observations, who examine with a calm mind the nature of things.

<sup>24</sup>C. 11. In this connection cf. the view that the earliest astronomical observations were taken between 30 and 40 degrees N. and perhaps between the sources of the Oxus and the Indus; see Proctor, origin of the Constellation Figures, in *Myths and Marvels of Astronomy*, London, 1878.

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From the summary of Oresme's opinions here offered we have, we believe, omitted no significant aspect, whether of treatment, or of result; we have to ask if it shows advance, if it marks a stage on the road to a scientific attitude to astrology, if it undermines the whole position of the occult sciences by the provision of real bases for criticism. There is scarcely need of a detailed demonstration of the fact that we are faced here with the statement of the orthodox mediaeval position;<sup>20</sup> that there is no pertinent argument, no way of approach used by Oresme, that cannot be paralleled from the works of his predecessors. He follows a way marked out by a long succession of thinkers and their limitations and difficulties are his. Like them he appears to us, who are wise after the event, or many events, to be unaccountably blind to the way of exit from the cage, of whose existence they are more or less conscious, which shut off so many mediaeval searchers from the secrets of nature. We have the same acceptance of astrology, with the same limitations, the same saving clauses, the same condemnations, and the same admissions as to illicit possibilities of obtaining knowledge. Such differences as distinguish Oresme from earlier advocates of restraint in respect to the claims of judicial astronomy are those of emphasis, of particular concrete argument, in short, those native and peculiar to him as an individual.

For the sake of economy in research in a somewhat extensive field we may go further and say that during the lifetime of Gerson and d'Ailly, the position remains the same, that these two men are on the whole less, and not more, sceptical than Oresme appears to be. Both are sincerely anxious that lay society should be restrained from foolish belief, both will be accepted as intelligent and learned, both fail to furnish adequate institutes on which

<sup>20</sup>As anticipated by Wedel, *Mediaeval Attitude Towards Astrology*, 1920.

rejection of superstition should be grounded. Gerson<sup>27</sup> admits the claims of the noble science of astrology as Oresme does; he ridicules the tricks of the soothsayers' trade and believes that they get good results by secret enquiries or by commerce with demons. He condemns the folly of the rulers of the commonwealth, who can neglect the opinion of hundreds, nay of a whole kingdom, to listen to that of two or three sham scientists; who can, on the advice of the latter, postpone a campaign for three months or a year while the enemy are destroying all before them. He is strong on the side of the angels and the saints, as against the stars and astronomers; but we must note his decision, if it can be called a decision, in a case that seems crucial as guide to his position. Suppose that in the matter of the war with England the astrologers, men of honest life, whose knowledge is based on true philosophy and natural reason, are in accord in announcing that such and such a constellation is menacing (*prohibens non tamen ex necessitate*); whilst wise captains and soldiers think that the campaign is expedient. In such a case the two opinions are to be weighed and on the balance of evidence the decision is to be taken. D'Ailly shows similar hesitation and gives the strong impression of real perplexity in face of the maze of opinion available to him. He cannot believe that the planets are signs and signs only; they must have influence (*aliquid faciant in exercitando*). As a fairly conclusive illustration of his standpoint we may recall his deduction after examining the doctrine of the

<sup>27</sup>For Gerson's views see *OPERA*, Ed. Ellis du Pin, Antwerp, 1706, vol. I., and especially:—*Epistola ad Studentes Collegii Navarrae ut posthabitis recentioribus antiquiores legant*; *Trilogium Astrologiae Theologizatae*; *Tractatus contra superstitionem dierum observationem*; *Opusculum adversus doctrinam cujusdam Medici Montis-Pessulani etc.*; *Tractatus de observatione dierum quantum ad opera*; *Tractatus de erroribus circa Artem magicam, et articulis reprobatis*; *Tractatus an liceat Christiano initia rerum observare ex coelestium syderum respectu*.

For those of Pierre d'Ailly his *Tractatus contra Astronomos*, printed in Appendix to above quoted vol. of Gerson's works has been used. His other scientific works have not been examined.

astrologers to the effect that the six sects of Hebrews, Chaldeans, Egyptians, Saracens, Christians, and of Anti-Christ, have arisen, or will arise, under the influence of various appropriate planets. He is inclined to accept this possibility for sects other than Christian *quantum ad illa quae in illis naturaliter sunt et naturaliter fiunt*. In the case of the birth of Christ it is not dissonant with the Faith, or with natural reason, to suppose that our Lawgiver was born of a good complexion because he was born under a good disposition of the heavens. It is not entirely useless to draw up the figure of the Nativity so that we may note what was according to the astronomers the position of the constellations at the time.

The demonstration that the position held by Oresme, and by two leaders of thought in the generation following him, is what may be termed orthodox, and authorized, is of some value in establishing a point of departure for future research; it must, however, be considered incomplete unless we can obtain from it some clue to a possible line of advance, or, alternatively, some characteristic common to these writers, some difficulty felt by them, which may lead to the discovery of such clue. We are confronted by two clear facts, that a traditional attitude was the one held by Oresme and his fellows at the end of the 14th century and that in the mid-sixteenth century for example, there is change; at the latter date, if scepticism is not efficient, it is potentially so and bases for that scepticism have been furnished. We have to ask for some sign, in the *Livre De Divinacion* and kindred treatises, of the cause or origins of the change. Generalisations as to Reformation and Renaissance will, nowadays, hardly be accepted as meeting the case, though they have often been allowed to serve as sufficient explanation. The Reformation, with its close reliance on the text of Scripture, will scarcely be regarded as removing the effects of accept-

ance of tradition and of a series of misleading prohibitions to be found in the Old Testament; a curious commentary on this suggestion is to be found in Calvin's *Avertissement contre l'Astrologie qu'on appelle judiciaire*.<sup>28</sup> The Renaissance, again, in so far as it was a return to antiquity, could not serve as adequate safeguard against superstition or as an incentive to the use of a rigidly scientific method; it may, indeed, have involved a breach of continuity in a slow process of advance. We may accept the traditional view of the awakening of a general spirit of enquiry and criticism, of the general "quickenings and enlightening" of the human mind, to be placed in broad contrast with a certain strange inertia of the mediaeval spirit not conducive to those outbursts of discovery in science that have distinguished some epochs of history. But, within these generalisations, we feel it advisable to penetrate closer to the particular manifestation and application of the working of the spirit of enquiry which acted in this field of research, which furnished eventually true bases for criticism and rejection of the claims of the astrologers.

We approach the essentials of the problem as we endeavour to visualise and define the circle of knowledge within which Oresme and his fellows stood, if we trace the frontier of the explored territory of which they were in possession. Now, in casting up the account and presenting a sort of balance sheet of belief and knowledge in the case of Oresme we are at once met by a fundamental and significant difficulty, one that seems to be inherent, namely, that it is impossible to draw a line sharply dividing knowledge from ignorance, or, that if such a line be drawn, we are left with a statement of the case so incomplete as to

<sup>28</sup>*Avertissement contre l'Astrologie qu'on appelle judiciaire et autres curiositez qui regnant aujourd'hui au monde*, par. M. Jean Calvin, Geneva, 1549, printed in *Corpus Reformatorum*, Vol. XXXV, Brunswick, 1868. Calvin's work is characterized rather by a lively treatment and by an admixture of his own peculiar doctrines than by the use of bases for criticism which are other than mediaeval.

be misleading for the purpose of future research. The mediaeval worker in this province has pressing on him what was undoubtedly the heavy weight of the accumulated lore of the past, a great assemblage of opinion of which the record of observed and verified fact formed but a minor part. He has the scripture revelation in which many things were forbidden in prohibitions, which went far to establish the existence of a world of magic, for why should the divinatory arts be so solemnly and repeatedly condemned if there were no possibility of dangerous contacts and knowledge. As part of his inheritance there is also that strong tendency to believe that knowledge, or the royal road to it, may be found somewhere in a book,<sup>29</sup> and not in the strict and precise observation of the material universe. In the modern case we have on the one hand, knowledge, and knowledge to be used as stock and apparatus, as intellectual capital for further accumulation and advance; and on the other, the limitless territory which science proposes to explore, and in which outposts have been established. Progress is not, in the abstract, hindered by tradition, prohibitions, counsels of expediency. This is, of course, to idealise and overstate the modern position but the broad contrast as between the best intellects of the ages under comparison may be accepted.

We have thus in mediaeval writings on astrology and divination a strange series of cross divisions; knowledge and ignorance, lawful and unlawful, sinful and approved, expedient and inexpedient, are some of these. From this atmosphere of hesitation and uncertainty we may extricate, nevertheless, one statement, not as to knowledge, but as to method, which is made clearly and unambiguously, and examination of its import will help to explain why Oresme and mediaeval investigators in general were thrown back on to the serious consideration of much in the

<sup>29</sup>As apparently even Picus da Mirandola thought.



way of argument that science now dismisses as irrelevant. Through the treatises of Oresme, Gerson, and d'Ailly there runs, like a refrain, the constantly repeated formula as to the methods by which knowledge may legitimately be acquired, that is, by Divine revelation, or by the exercise of human reason. Now the traditional description of the mediaeval period as the Age of Faith indicates a somewhat distorted estimate of the relative values ascribed to these two methods by mediaeval thinkers; we are apt to argue as if they attributed to faith something approaching a monopoly, as if they had no faith in reason. But reason had been bestowed by God as the approved and appointed instrument for progress in knowledge of his works. It is true that presumed possession of the scheme of the universe as revealed in the scriptures resulted in a certain mental passivity in some directions, and with this the age may well be reproached; as an interesting parallel to it we have the mediaeval synthesis of world history, which, established by Christian authors before the fall of the Roman Empire, appears as a leading cause or excuse for the almost complete neglect of history in the modern and more scientific sense. At the same time it is to be remembered that thinkers of the middle age were quite as capable as those of later days of making the literal meaning of the scriptures fit in with the evidence of their senses, with the obvious facts of everyday life. It was just because the facts of the physical universe were not obvious that the way was left open for exaggerated caution as to the possibilities of progress in science, or for the pseudo-science of the astrologers and soothsayers, as such. The root difficulty facing our authors is to be found when we come to consider the meagreness of the material on which human reason might be exercised in their day. Leaving on one side the causes for the scarcity, for the lack of progressive accumulation of data, we have to conclude that it was this scarcity which

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led to such reliance on authority, to such odd discussion of scientific bases as if they were matters of opinion. And by contrast we may note that, where the material was more easily accessible, real advance could be made, as in the case of Oresme's own contribution to economic theory, where the debasement of the coinage, and the consequences of it, were phenomena available for examination in the laboratory of life around him. The motions of the heavenly bodies and their relations are not in any age as obvious as the price of bread.

We appear to limit still further the area within which the answer to our enquiry is to be found when we come to examine a particular concrete example of the difficulties which stood in the way of advance on Oresme's part. It will have been noted that he emphasises strongly the uncertainty, the incompleteness, of even those parts of the study of the heavens which are in general considered legitimate and approved. The noble and excellent science of Astronomy cannot be known *precisément et à point*; the general may be known but not the particular. Gerson is clear that true science is not dissonant with theology, *omne verum omni vero consonat* and so on; he lays as much stress on the value of sober and accurate observation as any modern could desire; but with this there goes his evident perplexity at the lack of trustworthy record of observation, at the obvious conflict between those observations and the facts evident to his senses. The desire he shares with Pierre d'Ailly that those claiming knowledge of astronomy should be tested as to their science, and that the literature of the subject should be sifted, breaks down and becomes ineffective at this point; it was the standard of test that was lacking and among "so many and various observations" he was in practice unable to decide and confesses that, of the phenomena of the celestial movements and relations, much more was unknown than known. Pierre d'Ailly finds

diversity among recorded observations a reason for the same kind of perplexity, and from earnest striving to arrive at sound bases for knowledge there emerges his conclusion, *quod proposita quaestio de commensurabilitate motuum coelestium est problema neutrum de quo naturaliter haberi non potest evidens certitudo*. For even in terrestrial matters and those close at hand *nequeat saepe punctualis praecisio deprehendi, sed minor pars quam millesima aequalitatem tollat et proportionem de rationali ad irrationalem commutet*.

This distrust of their data, of the premises on which human reason had to work, is used by the authors with whom we are concerned as a weapon with which to attack astrologers and diviners; if astronomy lacked certainty then still less could the particular deductions of the soothsayers be accepted by reasonable men. We may find in it, however, an antecedent to the process which was to lead to the rejection of the Ptolemaic scheme, and with extraordinary slowness,<sup>30</sup> to the disappearance of the sciences which Oresme is anxious to condemn. The dissatisfaction illustrated tends to concentrate on the obvious failure of astronomical science when essaying to fix the length of the solar year, and, not only its length, but as Gerson says in a phrase, illuminating in this connection, *ex qua radice procedit*. "And if we fall short of accuracy when we attempt to determine the measures of the sun's motion how great is the error of those who presume to draw up halmanacks or exact and perpetual calendars." It was in this form that an ultimate and vital problem presented itself as one of practical importance and reached the understanding of the less scientific portion of European society so that Popes and Councils were concerned; and it is here, too, that we have a link with the work which may be considered

<sup>30</sup>The opinions of Lord Bacon on these matters will perhaps suffice as illustration.

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as the outcome of the dissatisfaction and groping exemplified by Oresme's little book. Copernicus in his preface<sup>31</sup> touches this matter among the reasons he sets forth for his research. The mathematicians are not in accord, they are not certain as to the motions of the sun and moon *ut nec vertentis anni perpetuam magnitudinem demonstrare aut observare possint*.

There is much to be said for the opinion that Copernicus' work was the culmination of mediaeval effort. He uses authority, it is true, but sparingly, and chiefly as a fairly obvious excuse for casting back to the heliocentric doctrine; his treatment of Lactantius was likely to arouse some consternation in the mediaeval mind; but the spirit of his reference to those who would condemn him on the ground of some passage of scripture *male ad suum propositum detortum* is mediaeval enough. His fundamental reason for rejection of the Ptolemaic system, that of its inadequacy to present a regular and unfailing synthesis of a universe founded *propter nos ab optimo et regularissimo omnium opifice* is one well in keeping with the efforts of the mediaeval compilers of *Summae* and *Specula* in other fields of thought. The genius which took the form of infinite labour in accumulation of exact observations and of boldness in deduction therefrom is to be paralleled, however, only in departments of thought other than that of natural science in the earlier mediaeval world, and this is a main reason for hesitation in describing his Great Charter of scientific method as mediaeval. The verdict will be governed to a large degree by the results of further research having as its intention the filling in of the gap between Oresme and Copernicus. Such research will be obliged to include careful examination of the works of the writers of the intervening period and above all must consider how far there was, in this century or so of interval, improvement

<sup>31</sup>The edition of 1543 has been used.

in the instruments and methods of measurement, of calculation, and record. It may thus be possible to establish some curve of progress leading from the position of discontent we have attempted to analyse to the great demonstration of 1543. It may be, however, that such ancestry for Copernicus cannot be established and that the "how" and "why" of the appearance of that solution at that time elude historical analysis.<sup>22</sup>

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<sup>22</sup>Since this analysis of Oresme's treatise was written I have discovered (a) that the *Demonstrations contre Sortileges* of Eustache Deschamps, (ed. Soc. des Anciens Textes Français, vol. VII, pp. 192-199.) is for the most part a transcript of certain sections of the *Livre* and may be used for correction and confirmation of the text thereof; also that the Bodleian MS. Can. Misc. CCXLVIII is a Latin translation of the French text. For this and for notice of borrowings from the *Livre* in the *Somnium Viridarii* see my note in *Romania*, July, 1926, pp. 355-361, "Eustache Deschamps and Nicholas Oresme. A note on the *Demonstrations contre Sortileges*."

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## THE METAPHYSICS OF THE INSTRUMENT

### PART TWO: THINKING AS INSTRUMENTAL

#### I

REFERENCE to mind is highly ambiguous. But before we proceed to exacter definition let us recall that in speaking of the fashioning of instruments mention was made of the presence of designs, ideas, patterns, mental blueprints, etc., which were indispensable to the resolution of certain construction problems. We shall regard these plans and trains of inference, distinct from purposes, as the denotative equivalent of mind and inquire whether an interpretation of mind as instrumental will clarify the operation of thinking and disclose certain characters of the objective milieu in which that thinking goes on. Proceeding as naively as above we shall make a "pseudo-phenomenological" survey and enumerate those features of thinking and mechanical instrumentation which appear identical or closely similar.

(1) The instrument, as we saw, is called into play in order to eliminate certain difficulties and transform possible linkages among things into actual linkages. Thinking takes place in problematic indeterminate situations in order to settle doubt and fix belief by effecting a relative stability in subject-matter.

(2) The instrument cannot make over existence by being placed in mere physical juxtaposition with it. The instrument is mediate in nature and operation. Thinking

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or inference is essentially mediate, acting upon what is immediately given, not known, through the causal intermediation of the sense organs. Just as the instrument in action must have something to take hold of, so the mind must have a leverage in structures and meanings already discovered.

(3) The construction and application of the instrument implies an anterior knowledge of laws and processes other than those which it is its avowed intent to discover. The presence of effective thought presupposes a whole body of prior knowledge which is brought to bear to purify the muddled presentations of sense and convert them into knowledge terms. Only because some affairs are already settled can we undertake to settle other affairs.

(4) There is a certain continuity and *coherence* among the parts of a machine. The parts must dovetail to insure the transmission of force or energy from "driver" through "a train of mechanism" to "follower" where the resistance is overcome. Lack of *coherence* in *thinking* may be a sign of complexity of subject-matter but is a sure warning that thinking cannot be successfully terminated save by accident; and since the practical purposes of thinking demand extension and generalization, the results of a chance occurrence may, if generalized, disorganize other subject-matters.

(5) There is a "living moment" or "organic unity" in the instrument which supplies both impetus and direction to its growth and improvement. Its entire mechanism does not interact at a given moment with a focal point or single aspect of the material it works upon. Although not held together by an "organismic" tie, it is something more than the sum of its parts and elements. Its various parts may suggest revision, amplification or rejection of their mechanical arrangements or positions without thereby necessitating the scrapping of the whole machine or its distinctive rationale. The "living movement" of thought follows



from its mediate character. The reciprocal influence between thought and the signs and data with which thought operates,—extends, modifies and systematizes meanings, so that the specific situation as a whole is illumined by a concrete universal. The concrete universal may be no more possible of ultimate realization than a perfect machine, but as inference becomes more detailed and adequate, checked by the cooperative inquiry of experiment and application, it approaches it asymptotically.

(6) Both instruments and thoughts represent the social character of experience. They express and communicate the purposes for which they are instrumentalities. In the first case, the reference to action and physical manipulation is open and unquestioned; in the other, indirect and removed. But where the outcome of thought has momentous consequences for the organism, we recognize its purport by what is in the last analysis *done* rather than by what is *said*, just as a child discerns the immediate purpose of the doctor not in his reassuring remarks but in the instruments he extracts from his tool kit. Later on that immediate purpose acquires a new meaning in the light of a bodily cure.

(7) Instruments may be removed from their contexts and converted to serve aesthetic ends, or more precisely, set up as aesthetic goods. The poisoned daggers and rings of the Renaissance have become *objects d'art*. Similarly, thinking may be detached from connection with vital and urgent problems in natural and human affairs and become an immediate good of enjoyment, as when we read G. E. Moore for logical exercise or play chess. But it does not even then become a stranger to the world of practice. It is still a mode of activity surcharged with directly enjoyed meanings which enhance one another and whose elaboration makes accessible subtler vistas in other fields and realms, enlivening the faded and enriching the familiar.

The enumeration of these characteristics of thinking is not intended to be exhaustive or irreducible. Whatever else may be added, those already mentioned, however, entail several conclusions concerning the nature of thinking or mind. (a) Thought cannot be epiphenomenal or automatic, idly mirroring an idle play of physical figures. (b) It must be of the same generic order as the object to which it is applied, for, if it is regarded as transcendent or transcendental, all discussion founders on the question of how thought can be practical. (c) It implies an incomplete system of relationships among things in which those terms most important for control receive most emphasis. (d) Hence, it must forego its claims to finality and accept without demur its status as an instrument continuously striving for greater efficacy in the definite case. When it settles itself or comes to rest, it is not yet at ease in Zion. It may go on from its resting place like the physical instrument or it may not—the determining factor is the nature of subject-matter. Where the environment is precarious and shifting, thinking becomes chameleon-like, its range changes flashing back the colors and difficulties of its problems; where the environment is relatively stable, the tempo slows down and instrumentalities become permanent features, everlasting rather than eternal, often objects of aesthetic contemplation absorbing our nervous surplusage.

We must now summarize the three generic reference of thinking as an instrument similar to those we sought and found in the mechanical instrument.

(1) Thinking is an instrument in reference to some non-cognitive experience, be it aesthetic, economic or social. This does not mean that we think only in order to eat better or that thinking takes place for the sake of action only, or other absurdities. It merely means that the cognitive experience is *par excellence* a mediating one between some sort of problematic situation and its prospec-

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tive fulfillment. That thinking has a sweep and destiny of its own which may subvert the ends to which it is instrumental and install others is not denied. We think in order to do good or in order to do harm, in sheer enjoyment or in utter despair. But we do not think in order to think anymore than we walk in order to walk or sleep in order to sleep.

(2) Thinking is an instrument *in respect to* and *because of* its mode of functional activity. It differs from other organic responses in that signs are its proper stimuli, the drawing of consequences its peculiar reaction. Doubting, guessing, controlled manipulation of things are attendant processes in verification. Its movement breaks up *upon analysis* into definite stages but there is no necessary order of succession in specific instances of its exercise. Its organization is more adaptable than is that of the physical machine in that there is a rapid and self-initiated adjustment to unforeseen difficulties. When we spoke of the machine correcting itself there was an implicit reference to the instrumental processes of trial-and-error thinking guiding the machine, for no matter how intricate our secondary contrivances are they do little more than register the fact that the machine is out of order.

(3) Thinking is an instrument whose exercise is *conditioned* by certain structural organizations in nature. The *ultimate* forms of thinking have metaphysical reference. These references are inescapable structural relations and are to thought what the laws of light and the characters of physical media are to the instruments of optics. But the natural conditioning factors are necessary, never sufficient. The kind of lenses an optometrist prescribes depends upon how the patient wants to use his eyes—a use which must be compatible with the nature of light but which is not necessitated by it. Similarly, a train of thinking is guided in the

direction of an outcome which the fact of natural structure must support but whose choice it cannot determine.

From a different standpoint knowledge is recognized as instrumental in the emphasis placed upon the primary presence of desire, impulse and will. Bertrand Russell, once the high priest of disinterested thought, occasionally admits that curiosity is an impulse and 'knowing for its own sake' the activity by which it is gratified.<sup>10</sup> Pushing this line of thought a little further, we find that most attitudes or manners of approach to problems are instrumental either to emotional consummations or to practical transformations. The nature of a sensory experience sought for is often foreshadowed or implied in the quality and tonus of the preparatory attitudes adopted in the quest. Especially is this true in the realms of religion and art where ritual and creative practices are often vital factors in generating the peculiar emotional intensity supposed to be their urgent source. Ordinary activities reflect this also. In seeking a new experience the affective qualities of the attitude or pose we adopt are not only instrumental to attaining a certain state of mind; they turn out in addition to be clues and faint intimations of the qualitative tone of the ultimate experience. By *playing* the lover we may not only come to a bad end and become lovers, like Mrs. Mount in Meredith's *Richard Feverel*, but we will also learn (no matter how we end) more of what it is to be a lover than if we had not written verse, kept trysts and followed Finck's manual. In emotional situations, more frequently than alas! in ethical situations, we judge of the nature of an end on the basis of the instruments and means engaged in realizing those ends.

A more serious illustration of the type of approach instrumental to practical transformation is furnished by many aspects of historical investigation. If there is genu-

<sup>10</sup>Cf. *Why Men Fight*, Chap. I.

ine continuity in nature, then the past is significant. Significant in that it helps chart, mine and explore the present and future. Historical analyses, genetic considerations, the imaginative recovery of the past are undertaken and performed because past occurrences are taken as implicative signs of some tendencies and impending event coming to the fore in the near future. We may be mistaken in assuming that the history of a case is relevant in any particular instance, but at any rate the alleged instrumental efficacy of the historical analysis is always the reason for dragging it in. Those who cry out against these remarks as a sinful confusion of origin and nature, history and validity, themselves confuse, if the position outlined here is correct, the operations and experiments which tend to establish validity with the final form which the subject-matter takes as *tested* and *validated*. Going the whole hog, we may say that if history is significant for knowledge, and if our knowledge affects our value judgments, there is some likelihood, despite the undistributed middle term, that history and value are not so diametrically opposed as some staunch analytic realists have held. But this will be the theme of another day.

Ideas can be shared and communicated only under the same conditions in which instruments can be communally used, their mechanism explained and their tentative operation guided. Among the more outstanding of these conditioning features are: (1) an appreciation of the critical points and perplexities in the problems and tasks to which ideas or instruments address themselves in hopes of clarifying or adjusting; (2) a perception of where to begin and a knowledge of the *direction* in which ideas or instruments are to be hypothetically applied; and finally, (3) at least a dim prefigurement of the desired end or solution so that there may be sufficient light in which to examine the ultimate adequacy of the various tools—physical and intellect-

ual. We do not ask how instruments can *agree* with what they are set to work upon for the only intelligible answer must be formulated in terms of results and accomplishments. To insist upon any other answer would be utterly fatuous. Nor are those any more profound who ask how *ideas* can agree with their objects if they expect any answer except in terms of how ideas operate. Viewed instrumentally, the idea or meaning, in order to show what its character is, must be put into use, at first prospectively, later actually, in some specific matter whether it be a certain region of latent physical continuities or a domain of mathematical operations. An idea cannot literally coincide with an objective fact since it is in no sense a physical thing; but where it is properly chosen its manifold implications parallel the natural ties and conjunctions of subject-matter. At work, it becomes aware that not all modes or methods of attack are equally suitable or efficient any more than wooden wheels or iron sled runners serve equally well for travelling through snowdrifts.

Ideas grow. So do instruments, and for the same reason. The material operated upon is not completely and finally integrated. When the idea balks at this internal, unsuppressable rhythm and dialectic, and attempts to twist and torture its subject-matter into some sort of stability, it goes astray and results in an epistemology or an eschatology. The very instrument with which the epistemologist pens his question and states his problem should furnish the solution to it, one radically different to be sure from what he was led to expect. For the theory of knowledge is the theory of the instrument.

Even though thinking is instrumental, it may be objected, its general processes and formal characters are irrelevant to successful inference in any particular case. It is notoriously evident that logicians whether their bias be inductive or deductive, do not make great scientific dis-

coveries. Insight, inventiveness, genius, are all brought in to account for discovery, and friendly critics set forth the scientist as artist.<sup>11</sup> What is the case, however, with the mechanical instrument? Briefly put, instead of waiting for inventions to spring full born from the brow of the mechanic confronted by a problem, the tendency seems to be to make the science of machinery *deductive* as in the work of Willis, Rankin, Reuleux, and others, so that the fundamental principles of various types of machines might be applied to delimiting and suggesting solutions to particular machine problems. If a problem arises which demands the introduction of a required kind of motion, the science of mechanism suggests or furnishes the means of producing it. In other words, the fundamental features and operative principles of existing mechanisms serve as guiding and controlling ideas for arriving at new mechanical devices and appliances. Naturally, at some point, as in any other train of scientific deduction which proves fruitful in discovery, some experimental fact is assumed generally about the range of continuity, which is not necessarily implied by the premises. This is the familiar risk involved in application. What holds true for technical instrumentation may be carried over to thinking. Of course a man can no more become a scientist or a philosopher merely by making an inventory of his logical concepts than he can become a mechanic merely by learning the names of his tools. But just as the mechanic must know, as a whole, the power and temper of his tools, what they are fitted for and how they can be wielded in supplementary activities, so the scientist and logician must be aware of what types of inference are best adapted to solve problems in different media and subject-matter. The only difference that enters into the comparison is that though the mechanic is conscious of *all* the physical implements and tools he

<sup>11</sup>Cf. Campbell, *Physics*, pp. 227-229.



uses, neither he nor the scientist is conscious of the logical methods which express themselves naturally as habits of mind. These methods or leading principles become explicit upon deliberate inquiry into questions of validity. The leading principles of thought, whether they be *in* science as principles we reason *from*, or *of* science, as principles we reason *by*, fall into certain deductive systems. By following their implications and computing numbers, ratios and measures taken as magnitudes of physical things, we become as assured of the existence of certain facts in stellar and atomic spaces as we are of the meanings of the data from which those conclusions were derived.

## II

Viewing thought as something which goes on among things and events, as a process fraught with consequences tragic or comic as they affect desires and purposes, may enable us to cast some light upon the central position of the instrumentalist theory of logic—a position which because it is not clearly stated is regarded for the most part as paradoxical and confused. Nothing is more sharply dichotomized in the minds of formal logicians, especially of those who pride themselves upon upholding the scholastic tradition, than the distinction between the processes involved in *how* we think and the terms and forms of *what* we think. This means among other things that the traits and characters of what is called *correct* thinking can never be established from the properties and results of *actual* thinking.

It is claimed here that an examination of how we think furnishes significant indications of the general nature of what we think, and that these types of *actual* thinking which are most effective in helping us to discover "from the consideration of what we already know, something else

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which we do not know",<sup>12</sup> are the sources from which formal logic derives the compelling qualities of *correct* thinking. The undeniable *fact* of human thinking and purposive activity is itself implicative of the further fact that men have already successfully coped with the various problems and difficulties in the specific subject-matters in which those embarrassments have arisen. To have emerged with a conception of what our propositions effect and with a confidence in the power of inference to guide us to those effects, implies that the functional dependence of the operations and connections of *things* must be suggested, indicated or reflected in the *forms* of inference. Actual thinking goes wrong when it does not get us to where we want to go, or in Peirce's words, when it does not tend towards the settlement and fixation of belief. If we could determine by tossing a coin or drawing a card how future events would turn out, then in the fields in which the predictions are verified, coins and cards would be powerful scientific instruments. If the opiates which Heinrich Hertz used were invariably effective in enabling physicists to reach brilliant and fruitful conclusions, then in setting forth the logic of scientific thought they would have the same claim to consideration as trigonometric tables and other instruments of experimental science. On the other hand, if in matching colors I am guided by a variant of the rule that things equal to the same or equal things are equal to each other, I should soon find myself involved in irresolvable perplexities. We do not think in any old way for, in the main, we are *habit bound* reacting to new situations with mind-sets that have proved effective in adequately settling other situations. Familiarity with these 'other situations' determines in the minds of other people the limits of con-

<sup>12</sup>Cf. Peirce, *Chance, Love and Logic*, p. 10. The first two essays reprinted in this volume contain the most adequate treatment of the relations between formal and material logic ever written from the standpoint of scientific pragmatism.

ceivability and intelligibility within which the margins of our 'incorrect' or 'wrong' thinking are set. Inasmuch as everyone is acquainted with certain invariants of structure and function in existence, when it is said that we *ought* to think in a certain manner what is meant, if that *ought* is not merely to be an impertinence, is that our thought must follow the *formal* and *schematic* outline of what we *do* think or *did* think when that thinking leads or has led to the satisfactory settlement of a problem. The canons of satisfaction (the reader is begged not to take this word in its personal connotation) are to be derived from certain forms of *physical* activity in *objective* situations. There are various ways of 'going about' or 'doing'—good, bad or indifferent. Those forms, to repeat, which actual thinking takes when it leads more frequently than any other, to the completest reorganization of an experience are the principles of thinking we *ought* to follow in particular cases of the same kind. Ultimately the prescriptive in logic is descriptive of what actually holds true for some segment of existence.

Good or bad thinking, then, as Peirce and Dewey have continually pointed out, is not connected in the first instance with formal thought at all. Just as things of stone and steel become instruments for certain ends, so inferences become tools for certain purposes. The appropriateness of instruments and inferences is determined largely by reference to their terminal completions. The definite ends and purposes towards which thinking is directed are conditioned by the possible rearrangement of subject-matter which already possesses a determinate character and therefore exacts a specific program of action. If in the nature of things different 'thinking-procedures' turn out to be equally good, an examination of their formal features will show that some general formula of 'condition-fulfillment' covers all cases.

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Good thinking is fruitful. So is bad thinking—of something else. Of course a wrong key applied to a door together with the exertion of pressure against it may force it open. But if all doors opened that way we should need but one key to get around. Similarly if *any* kind of thinking were as good as any other, we should never need to take pains with our thinking at all. But we find that some types of thinking are better than others. By examining their characteristics we learn something about the nature of the world in which thinking goes on. Some day, doors may be rebuilt so that they will open to any key; but the pragmatist, admitting that he wishes to alter certain phases of the social background, insists more strenuously than his staunchest critic that far from wishing to remake the whole of existence, he does not even know what such a phrase means.

Yet the instrumentalist position is regarded as anti-intellectualistic and irrational at heart. Quite the contrary is the case. What it regards as the paralogsms of reason arise from the attempt in the name of rationalism to impose by a sort of deductive prestidigitation a type of order operative in one region of experience upon another region where it does not apply. The *alogical* for instrumentalism is not the *irrational*. Just as soon as its 'unique' order is understood and the terms peculiar to it enter into inference, the generic traits of the *alogical* are translated into guiding principles and acquire logical potency as they are generalized and find application. Our habits of understanding change as we go from some subject-matters to others; we do not approach problems in human relations as we do problems in mechanics. We may apply the epithet 'illogical' to our *thinking*, never to *existence*. Bacon, in whom we find the first glimmerings of an experimental theory of logic, entitled his work *Novum Organum*. The logical writings of Aristotle were recognized and used as an

*organon* long before they were called such. To reject the *organa* of Aristotle and Bacon as inadequate is to indict their metaphysics, that is, their theory and description of existence, not for being thoroughly false and unfounded but for being in certain important respects limited and partial. Only when we follow a purist logic or a purist ethics and delude ourselves into thinking that we can take our standards somewhere else than from this world of matter and motion and mind, can we denounce other views or attitudes, more noticeably of earthly accent and idiom, as irrational or unethical. But if logic declares itself to be the language and grammar of things, then its declensions must reflect the forms of things and its tenses and moods their functions and activities. When how we *ought* to think is taken as a matter of immediate intuition, then there is or should be no arguing about it. Intuitions in their immediacy are notoriously incompatible with one another from time to time and from person to person. Their ultimate agreement, the only mark of their genuineness, is arrived at as a conclusion of a highly mediated series of inferences and observations. The predicament of the logical intuitionists is almost as anomalous as is that of those philosophers who assert that immediate knowledge is a fact and yet cannot say without falling foul of one another what are the facts which we have immediate knowledge of. If the *ought* is not a matter of intuition but an indication of relative existential superiority in finding, checking and testing, then logic must be handled experimentally and can never be laid down with an absolute assurance that it holds for all times and places. The belief that absolute assurance is necessary for or equivalent to the validity of inference, it will be remembered, follows only on the hypothesis we are combatting.<sup>13</sup>

<sup>13</sup>In an article in the *Century* for December, 1926, Bertrand Russell concludes humorously yet consistently enough with the following:

"Logic was formerly the art of drawing inferences: it has now become

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## III

A few remarks on purpose or intention will bring the section to a close. It seems almost axiomatic that if thinking occurs in incomplete situations for the sake of integrating or unifying certain of their dissonant aspects, the movement and truth of thinking in any particular case cannot be completely intelligible without reference to the specific purpose it fulfills or subserves in its subject-matter. Just as we understand things by knowing the ends they serve so we understand a thought when we know its drift and goal. This apparently innocent doctrine has provoked the most vituperative criticism. It has been said that in the interests of logic and decency we should make every effort to understand *what* a man thinks before we attempt to ferret out *why* it is he thinks the way he does; that the latter quest is impudent and besides quite nebulous; that even if we succeed in it, our findings are utterly irrelevant to the *truth* of what it is that a man does believe, etc. Now, what all this criticism proves, when directed against a position such as is outlined here, is that where the instrumentalist writes *purpose* his 'tough-minded' critics read *motive*; that where certain facts arising from the attempt of man to predict and control his environment, facts which

the art of abstaining from inferences, since it has appeared that the inferences we feel naturally inclined to make are hardly ever valid.

"I conclude, therefore, that logic ought to be taught in schools with a view to teaching people not to reason. For if they reason, they will almost certainly reason wrongly."

Aside from certain logical difficulties which arise from the reflective nature of Russell's own recommendations, this passage is a *reductio ad absurdum* of a purely formal conception of logic. On the level of practice, it reduces to a "degenerate" form of pragmatism in that it admits that, whatever efficacy thinking may have, it is in virtue of its own *instinctive* exercise in a concrete subject-matter rather than by deliberate formulation of its method. Russell evidently recognizes two standards of validity—one which permits him to say that people are to be taught "not to reason" since their natural inferences are invalid, a fact which from our point of view can only be established by the experimental results of thinking, and remedied by teaching them how to control their experiments; and a second standard where he implies that unreflecting practice has its own norms. This latter points the way to an unholy alliance with Bergson! Pragmatically, it makes no difference whether one says that pure logic has nothing to do with existence or *vice versa*.

the traditional logic has assumed and then ignored, have been made explicit by the instrumental school, the analytic friends of the traditional logic have interpreted them in the false light of contemporary psychological fables and will-o'-the-wisps. One is tempted to say: That is what comes of neglecting psychology. But at any rate, purpose is different from motive and pragmatism (or pragmatism) is not psychoanalysis. In fact, it is the rigor of the pragmatic test which has chased psychoanalysis from the scientific laboratory into the market place.

Purpose for the instrumentalist is as different from motive as novelty is from surprise. Purposes are more objective than any motive can possibly be, for they are set in and can be inferred from the terms and relations of the subject-matter whose rips, tears and open seams thinking tries to sew up. That we are not corrupting an old word by imposing a new meaning upon it can be clearly shown in the distinction made between motive and purpose in ordinary discourse. A government spy may have a motive for joining a radical labor organization. It may be loyalty, rancor or any other prompting equally as difficult to determine. His purpose may be to gain the confidence of the members, acquire a strategic position and urge the acceptance of planks and programs which the government later makes the basis of its prosecution. Those purposes, however, as well as the purposes of the organization in whose activities the government is interested, are as objective as the situation of industrial stress and exploitation which the respective organizations are trying to emphasize or minimize. Surely there is a difference between the purpose a bridge serves in spanning a river and the political and financial motives which may have been behind the project. Judgment of the bridge's adequacy lacks point if it is made independently of those purposes. Knowledge of purposes

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enables us to *test* intelligently and so distinguish between by-products and major results.

Purpose as here understood is part of natural function, and structural analysis becomes meaningful as it bears upon and pertains to that function. The fact that a frog is an organism does not render its dissection either unnecessary or uninformative; but the understanding of how a frog *behaves*—its jumping, breathing, reproducing and dying will never be acquired through chemical reagents and scalpel alone. Likewise the fact that thought or inquiry has a life, an interest or an end of its own, does not render an analysis of its forms or a binding of its movement into a syllogistic strait-jacket either unnecessary or uninformative; but the understanding of the process of inference as a flight from a state of doubt through more or less organized guesses to a state of settled belief, will never be achieved through an *ars syllogistica*. As was implied in another connection, the syllogism no more represents our mental processes of trial and error than a map we draw represents our actual peregrinations, but where we use either as an instrument to point out or deduce certain conclusions its order entails, it is because it reflects a natural order discovered by other means. If we were permitted to generalize the meaning of the word satisfaction, then, we should say that an idea or system of ideas is *logically satisfactory* when it includes not only a logical analysis of its part-whole relations but also an appreciation of its tasks and purposes, revealed not by a conjecture at psychological intent but by an examination of objective material. That is what an instrumentalist logic means when it says that knowledge of what the purpose of your thought is—of what it sets itself to accomplish—is essential if not prerequisite to an understanding of what you are thinking. It is the time-honored manner of studying mechanical instrumentation. Indeed, all intelligent presentation of the

history of scientific and social or philosophical thought follows the same track. Every mathematical exercise illustrates it. It is here expressed in such simple and definite form, however, that it is often overlooked. But wherever a mathematician says *given*, *to find*, or *to prove*, he has set the purpose of his thinking and ours so long as we follow him. From the *given alone*, he could go anywhere, and going anywhere he would hardly know whether he was beginning over again. If thinking does not imply a purpose or goal, discovery would be a blind guess, communication a miracle, and a twice told tale the shattered accents of an echo.

In order to make the point clearer we must tie up our remarks with what was said a few pages back. In a world that has had many histories, what in a Pickwickian sense is called 'correct' thinking may not be good thinking any more than a well-made instrument is necessarily a good one. If we ask for a can-opener we may be given a well-made carving knife but no matter how nicely constructed the knife is, it is *not* a good can-opener. When it is said with an air of paradox that a person is reasoning 'correctly' but not 'well', what is meant is that the specific train of thought employed which generally has given true conclusions in the past has failed to lead to a true conclusion in the instance under consideration. The failure is then traced to the selection of premises which are false as a matter of fact. When premises are taken even hypothetically, it is in relation to certain consequences which follow from them significant for the end in view. We discover what a man is driving at by following out the implications of an idea to determine what it points to. Of the idea just as of the instrument it is asked, 'Where does this get us?' The answer lies in the consequences and results to which instruments and ideas alike give rise. The formal consistency of the idea is not all-important and if we do not lose our

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breath in a mad rush for conclusions, it is comparatively easy to attain. Many foolish proposals have often been recommended to men's minds because of their thoroughgoing consistency. Formal consistency, however, with apologies for emphasizing the obvious, is never sufficient although always necessary for the establishment of truth. The ultimate power and meaning of the idea is evidenced or presenced in its *denotative* effects. Ideas are rejected for the same reason that instruments are scrapped or replaced, that is, either because they lead to an impasse or because they threaten to produce results we have neither desired nor expected and which, if we wish to solve the problem and not just talk about it, we cannot accept.

We shall close this section by reiterating that purpose is to be read from the characters of the objective situation in which the problem is set for solution, not from the personal motives which tell why someone chose to attempt the solution. An account of the latter might make an interesting story and an enterprising person with an eye to this journalistic age might write the story of the piques and prejudices and sublimated urges which have impelled men to choose one set of problems rather than another. This is as harmless and useful as any other kind of gossip, but it becomes downright mischievous when what is overheard in the philosophic scullery is retailed as the story of *philosophy*.

### PART THREE: THE ETHICS OF THE INSTRUMENT

The instrument has been used to define an age, a species and a mind.<sup>14</sup> And having proved in addition suggestive for aesthetic analysis,<sup>15</sup> it may also serve to derive an ethical attitude. Observations and reflection show that the possession of instruments or means often determines the ends for which they are used. Finding ourselves with an instrument in hand we experience a motor and kinaesthetic stimulus to bring it to bear in certain immediately suggested ways upon the environment. Called upon to explain our act we reverse the actual order and maintain that the eventual state of the environment was the end we had in mind throughout the entire process—an end which logically necessitated the selection of that particular instrument and movement.

This is the customary analysis of the ethical situation. Starting with a statement of the ends consciously erected or imposed, it finishes with an examination of the means selected to gratify those ends. But this is hardly an adequate description of the facts. George Washington, as the

<sup>14</sup>Cf. Boas, *Mind of Primitive Man*, p. 96. Man as a "tool-using animal" (the phrase is Franklin's, I believe) has been enshrined in the literary tradition for more than a century. See Carlyle's panegyric in *Sartor Resartus*, Bk. 1, Chap. 6.

<sup>15</sup>George Bourne, in a very stimulating article on "Rural Techniques" in the *Cornhill Magazine* for September, 1903, among other suggestive things, writes: "That law of adaptation which shapes the wings of a swallow and prescribes the poise and elegance of the branches of trees, is the same that demands symmetry in the corn-rick and convexity in the barrel; . . . and that, exerting itself with matchless precision through the trained senses of haymakers and woodmen gives the final curve to the handles of the scythes and the shafts of their axes. Hence, the beauty of a tool is an unfailing sign that in the proper handling of it, technique is present."

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story goes, chopped down the cherry tree because he was given a little hatchet and the play activities of most children have not been different before or since. The ends of their play are functions of the kinds of toys they own. The case is no different for adults in the more serious business of living and working as well as playing. Instead of forging instruments to initiate changes for the sake of an *ultimate* good which does not itself change, instruments are often wiser or more potent than those who have made them, and shift the ultimate reference farther and farther from the specific terminus which first called them into being. Nothing reveals more clearly its objective teleological relation to a non-personal environment. Besides being on occasions a convenient toy which presented to a refined sense arouses an aesthetic experience, the instrument is more often a dubious and therefore a dangerous possession which gratifies immediate ends only to subvert them.<sup>18</sup>

The persuasive force of instruments, means and materials upon apparently independently proclaimed slogans and goals towards whose fulfillment they are later manipulated, makes itself felt in every form of human activity. Who will deny that we frequently decide to build because we have the material and physical instrumentalities *at hand*? True we are gripped by ideas and intentions which seem to be antecedent to a consideration of ways and means, but unless there is an implied reference to available instrumentalities, these conceptions and purposes turn out to be idle conceits and fancies. The ambitious projects of a madman are waved aside because their execution demands stuff finer than gossamer and an expanse larger than the heavens. A man does not decide upon the songs or parts he wants to sing and then proceed to train his voice

<sup>18</sup>Cf., Morris R. Cohen, *Journal of Philosophy*, Vol. XI, p. 214. Professor Cohen, in connection with the philosophy of law, has been among the first to question the customary assumption that "the end determines the means and never *vice versa*." The illustration used in the text is his, I believe.

in order to sing that song or part. So long as sensitive ears rule the world, let us hope that the quality and range of voice a man has, will determine the kind of song he essays. If we are to take literary craftsmen at their word, it appears that not infrequently the intent and direction of their very thoughts take shape from scrap books of inchoate phrases, words and figures of speech, jotted down at various moments as so much literary stuff and ammunition. A half-clothed figure of speech suggests a thought because words, already thickly encrusted with meanings acquired in old and faded contexts, are instruments still vital in social intercourse.

Why so much ado, it may be interposed here, about an influence so inevitable and so widespread? Merely this, that we become genuinely enslaved to instruments when the ends they mechanically and directly set up are unconsciously accepted by us as natural and necessary—when not only the *general kind* or *type* of end but its *particular* character, tone and color are regarded as predetermined. The instrument in use rarely if ever conditions *one* solitary end. It is suggestive upon reflection of *various* ends. When that reflection begins there is at least always presented a choice between scrapping it or not. Consciously manipulated and deployed in concrete situations, instruments *liberate* possibilities by *limiting* and *conditioning* others. Where reflection is absent the incidence of the natural suggestive power of the instrument terminates in the nearest, the readiest consummation, in other words, upon something more or less accidental. Becoming insensitive and oblivious of the rich potential of ideals stored in its rib frame of steel, we begin to think of that instrument only in terms of the accidental consummation it subserves. When we decide whether tractors are to be employed for farm purposes or trench warfare, whether aeroplanes are to be converted into bombing machines or into

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agencies of mail transmission—in short, whenever action follows upon a weighing of the possibilities latent in the material and instrument at hand—we are on our way to an enlightened morality.

All social reform whether undertaken in the name of god, social engineering or revolution presupposes a belief in the instrumental character of social institutions. Reorganization is easiest and most effective when the direction of the change is in line with the natural unfolding and growth of institutional forces. An examination of the *instrumentalities* of economic production, for example, suggests to collectivists a revision and extension of the social ends of current distribution. These readings in terms of economic forces and resultants distinguish them from the Utopians, who, like the poor, are always with us, and who, in the eyes of those that pride themselves on their social realism, attempt to transform things nearer their heart's desire by the incantation of democratic shibboleths and by philanthropic exhortation rather than by class organization and struggle. Another example from collectivist theory to show how they desire to widen the interest of a political or social instrument may lead to its abolition, is illustrated in the conception of the state. The state regarded as the executive committee of the ruling class, capitalist or proletarian, will in Engel's phrase 'wither away' when economic classes are abolished and will be replaced by more voluntary forms of organization. So long, then, as ethics pays attention to ways and means, instruments and agencies, it is intimately linked with social philosophy.

Although instruments have often been the means of man's enslavement, construed as they appear in their social setting they breathe a promise that they will make him free.

SIDNEY HOOK.

NEW YORK.



## ALEXANDER'S METAPHYSIC OF SPACE-TIME

### II. SPACE-TIME AND THE CATEGORIES

**T**HAT the theory of the categories is altogether central for his metaphysical hypothesis, Alexander has very rightly insisted. Negatively, it is supposed to dispose of the relational theory of Space and Time by showing that relations in general have their basis in Space-Time and presuppose it; positively, it indicates, with remarkable scope and ingenuity, the way in which this ubiquitous entity accounts for and justifies the pervasive characters of the world we know. It seems hardly possible to deny that Alexander has established a very close connection between Space-Time and such categories as substance, cause, and the rest. Yet once more the account is finally and radically inconsistent, and for reasons with which we are now familiar. Never did a thoroughly relational theory have more to recommend it; never was its subordination to a prior absolute more obviously and crushingly disastrous. And for both these reasons the theory merits consideration it has not yet received.

Up to a certain point the whole work can and must be interpreted on a relational basis. The categories are not abstract concepts, complete in themselves, they all "communicate" with the basic category of relation and, what is more important, owe their validity to some specific aspect of the structure of Space-Time, the relation of Space to

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Time,<sup>1</sup> of point-instants to each other and the like. Hence the familiar relativity, here insisted upon by our author in no uncertain terms. (a) Just as Space and Time might be considered in abstraction but were really comprehensible only in their concrete basis in Space-Time, so with the categories. An abstract rationalism which treats substance, relation and the rest as if they were sufficient in themselves, and hence moves in a realm of mere possibility, is requested to note that all its balloons are captive ones.<sup>2</sup> Like Kant before him, our author insists upon the relativity of the possible to the actual, and each category must finally justify itself by its place and function in the empirical world. Even Bradley's criterion of self-contradiction must abate its absolute pretensions: "Deriving its validity from Space-Time itself, it cannot be employed to undermine the reality of Space and Time and reduce them to appearances of an ultimate reality which is neither, but accounts for both. If Space-Time is the ground on which the criterion of contradiction is based, Space and Time are not themselves contradictory."<sup>3</sup> Surely the relativity of form to empirical reality was never more urgently presented.

(b) The opposite mistake of extreme empiricism is equally avoided. As there are no absolute concepts, so equally there is no absolute datum to which the categories must be added externally. Things are related, and intrinsically related, from the start because they are intrinsically spatio-temporal. Neither a transcendental unity of apperception nor a tendency to feign is necessary to introduce categorical relations into a world that knows them not. The structure of things does really belong to them *de jure*, and the whole purpose of the theory is to demonstrate that

<sup>1</sup>S. T. D., I, p. 324. We are warned here not to speak of a relation between Space and Time but the term "connection" which Alexander uses is, for our purposes, identical. Wherein a connection differs from a relation, our author does not explain.

<sup>2</sup>S. T. D., I, p. 177.

<sup>3</sup>S. T. D., I, p. 206.

fact. And here, oddly enough, Alexander is following the spirit and teaching of Kant, divorced from the vicious subjectivism of that doctrine.<sup>4</sup> The essence of the Kantian reply to Hume and the empirical vindication of causality lay in connecting it with the character of Time, that of substance in its implication in Space and Motion. As surely as Space and Time are facts of experience, so surely are the categories of the "dynamic" group applicable to all possible experience. For Space and Time would not be what they are unless they were connected in just these ways. Once freed from the unhappy presuppositions of the transcendental Aesthetic, which it so plainly contradicts, this doctrine is an abiding contribution to a relativist theory of the categories, as Brunschvicg has recently shown,<sup>5</sup> and Alexander, in extending it to the categories in general and interpreting it objectively, stands assuredly in a great tradition.

Finally (c) this theory meets the ultimate objection levelled against the relational view of the world. The categories, and particularly relation, are valid because they are features of a world itself relational through and through. In his reply to Bradley, Alexander urges that the criticism of relation gains its plausibility from the fact that relations are treated as if they did not relate. So Space and Time are supposed to be contradictory because their connections to each other are ignored. Once it is realized that Space-Time is genuine continuity, that Space connects Time and Time Space, the objection is met. If relations had to fall within a super-relational unity, then indeed they could be but appearance, but if the reality is itself "togetherness and distinctness", such relations will find their place in it not as an alien element, but as being of the nature of reality itself. And hence the relativity of finite

<sup>4</sup>S. T. D., I, p. 190.

<sup>5</sup>*L'Expérience Humaine et la Causalité Physique*, Part V, Book XVIII.

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beings does not compromise their reality. "All finites being complexes of Space-Time are incomplete.—But their absorption into the One does not destroy their relative reality. That could happen only if the real into which they are absorbed were of a different stuff from themselves. But to be a complex of Space-Time is to be of the stuff of which the universe is made. Now a configuration of motion is not destroyed by its relation to the circumambient medium but is, on the contrary, sustained thereby."<sup>6</sup>

The specific derivation of the categories follows directly from what has been said above. (a) The "non-empirical" nature of the categories is in no way due to their independence of the experienced world in general. They do in fact enable us to "anticipate" particular experiences, but only because they are pervasive and apply to *any* experience, and hence to all particular ones. And this pervasiveness, their one distinguishing feature, is due to no virtue of their own but to the fact that they are the features of Space-Time as such. And since, on this hypothesis, any empirical thing is at least spatio-temporal, it follows that it will possess such characters as are proper to Space-Time. Thus essentially, "the categorical characters of things are features of any bit of Space-Time as such, merely so far as it is spatio-temporal".<sup>7</sup> (b) Though thus limited as to independence, the categories are absolute in their scope. Mind and its objects are categorically connected within a common world, and we need look for no especially favored region of experience to which the categories are peculiarly applicable and beyond which they must be extended by analogy. The common structure of the world, the warp or structure for the rich embroidery of qualitative being,<sup>8</sup> is vindicated against the sceptic. No doubt it is relative to the empirical world, but that world is no less relative to

<sup>6</sup>S. T. D., I, p. 346.

<sup>7</sup>S. T. D., I, p. 189.

<sup>8</sup>S. T. D., I, p. 186.

it, and in this reciprocal connection the problem of the categories finds its solution. (c) It is possible to see in what precise sense a "deduction of the categories" can be secured. In one sense there can be no such deduction, as Alexander insists. The features of Space-Time are what they are and we can only point to them.<sup>9</sup> Thought must accept the world and not ask why it should be this world rather than some other. But in another sense Alexander insists upon such a deduction in the most rigorous fashion. We can tell why empirical things should have just these and these characters in virtue of their spatio-temporal basis. Thus Kant is taken to task because "he is unable to give a satisfactory account of the *reason* for intensive quantity"<sup>10</sup> and our author out-deduced his predecessor by indicating the precise spatio-temporal connection which accounts for this category. And so for each of the others, a specific basis in Space-Time is discovered, continuity, uniformity, or the like, from which the category as a feature of any empirical situation follows directly. And apparently this derivation is necessary for all genuine categories, for likeness is denied that title precisely because "there is nothing in Space-Time which *requires* (though Space-Time admits) the overlapping of empirical universals."<sup>11</sup> Hence we have something very like a "metaphysical deduction" on a very substantial basis.

But once more, this is only half the story, and the other half is the complete and final negation of all that has gone before. Alexander really does mean all this, but he must needs combine it with those absolutist presuppositions which proved so destructive for Space-Time. And with such a foundation, we can hardly hope for better fortune here. So we find that each of the principles so far considered is sacrificed in its turn. (a) The categories were

<sup>9</sup>S. T. D., I, p. 337.

<sup>10</sup>S. T. D., I, p. 310.

<sup>11</sup>S. T. D., I, p. 249, my italics.

to be relative to the empirical reality, thus putting a formalistic rationalism in its place. But this empirical reality is pure Space-Time, the most barren of abstractions, an absolute in itself. To this all the categories must perforce be reduced. They are empirical not in the legitimate sense of conditioning and being conditioned by the world of events but in the mythical sense of actually being composed of spatio-temporal stuff. Once more the absolutist cannot stop with an ultimate relativity, he must proceed to identification. The categories not only are relative to Space-Time but they *are* Space-Time. Again the ruinous fusion of form and matter. The categories, no more than Space and Time, can fulfill their relational function when they are substantialized in this fashion. Hence in each case a conflict between the relational function of the category and the particular existence which its reduction to Space-Time confers upon it.

(b) Contrary to the initial assertion there *is* an aspect of the world which is above the categories and from which they are imposed upon the rest. There is an absolute which is not conditioned by the relational structure of things. And that is pure Space-Time as a whole. It is the source of the categories but is not subject to them. They are conditioned by it, but the dependence is not reciprocal. Mind is on a level with empirical things but this new absolute cannot "descend into the field of Number", nor of the other categories, as our author specifically asserts.<sup>12</sup> Substance and causality need Space-Time, but it does not need them. They do not condition its very being but are simply characters or features derivative from it.

(c) The justification of relations is thus withdrawn. For Space-Time in this sense is as much a "super-relational" whole body as Bradley's own Absolute. The intricate structure of perspectives which was to guarantee its to-

<sup>12</sup>S. T. D., I, p. 339.

getherness and distinctness cannot now be ultimate, for that was a relational structure, assuming from the start those very connections which are now said to be inapplicable to the "One" Space-Time. And if that structure is not ultimate, neither are the categories. The "One" does in all truth engulf the many and the outcome is the precise opposite of the initial position. But each of these assertions must be justified in detail.

First, consider the substantialization of the categories. This follows logically enough from the initial assertion that all relations are of the same stuff as the terms they relate. But Alexander is quite specific. For motion in the singular, "*a* motion, or *a* space or *a* time"<sup>13</sup> is a category and such motion, it will be remembered, is the basic stuff of reality. "It might be objected that a motion or a bit of Space-Time is a real existent concrete thing and therefore cannot be a category. Such an objection would imply a complete misunderstanding of the nature of the categories. They do not express mere adjectives of things, but concrete determinations of any space-time. Existence is the occupation of any space-time. Universality, for all its abstract name is a concrete plan of arrangement of space-time, relations are connections which are themselves space-times. There is therefore no difficulty from this point of view in treating motion or *a motion* as categorical."<sup>14</sup> And elsewhere we learn quite emphatically that "all the categories are configurations of space-time. The only difference is in pervasiveness of the categorical as distinct from the empirical determinations."<sup>14</sup>

Now a chair is an empirical determination or configuration of the same space-time and apparently only falls short of being a category because there is not enough of it. If

<sup>13</sup>S. T. D., I, p. 320. Space-Time as a whole is not a category, to be sure, but the difference is that of "configuration" and stuff configured, and the configurations are as concrete as the unformed stuff, though not as ultimate.

<sup>14</sup>S. T. D., I, p. 321.



a motion is categorical there is nothing that is not. It is only the particular kind of motion which is empirical, but that is an additional determination. Just as the Pythagoreans attempted to make a world of numbers, identifying the form and stuff of things through the medium of spatial arrangement, so does Alexander carry on that hardy tradition. The paradoxes of Zeno served to indicate to these early rationalists that positions and concrete motion must be distinguished, that form and matter are disparate and things are only like numbers. Equally paradoxical consequences may yet prove that Space-Time is not the stuff of chairs and categories.

Three categories are of central importance here. Take universality. There are two aspects of the problem. What is universality, and what are universals? We consider the latter first. A universal is a plan or pattern or habit. "Particulars are complexes of space-time and belong therefore to the same order or are of the same stuff as the universals which are plans of space-time."<sup>15</sup> What kind of being has the universal "dog" for example? The answer appears to be unequivocal. "Being—is the same as determinate being or existence." And again: "There is no category of being, then, other than determinant being or the existent. Since existence is occupancy of a space-time in exclusion of other occupancy, and since such occupation is always temporal, existence must not be limited to present existence but includes past and future."<sup>16</sup> Now we should suppose that a plan or pattern is not at all the sort of thing that could occupy one space-time in exclusion of other company, for many particulars partake of the same universal. Yet if universals are made of space-time stuff they are obviously as particular as their instances and exist in the same exclusive sense. A universal can no more be in two places

<sup>15</sup>S. T. D., I, pp. 220-21.

<sup>16</sup>S. T. D., I, p. 200.

at once than a particular dog. And in that case it has lost all vestige of universality.

Obviously our author cannot accept this result. Having reduced the universal to existence we are later to find that "they are never bare potentialities—but possess such actuality as they can possess, which is not particular actuality or existence."<sup>17</sup> And having heard that all reality was the occupancy of a space-time in exclusion of other occupancy, we now learn that "the universal—may be said to possess that kind of existence which is called subsistence. For it is free from limitation to one particular space and time. The universal is nowhere and nowhen in particular but anywhere and anywhen, and in Hume's language is in readiness to start into being (which is existence) when the occasion calls. It is not timeless or eternal as being out of time, but as being free from limitation to a particular time."<sup>18</sup> If this last statement is true, then the attempt to reduce universality to space-time occupation or "determinate being" has failed. Unless it is true a universal cannot be what this theory demands, a plan or law of construction common to many instances. And unless it is both true and false at once the fusion of form and matter has failed. The contradiction is quite obvious, and so is its basis. As Time could not be a series of positions and also that which occupies positions so a universal is not both a particular existent and a unifying principle for distinct existences. The "third man" difficulty is with us again, and Alexander tries to meet it.

The reply takes us from the universal as an entity in itself to universality, or the category in virtue of which there are universals. And this is unquestionably a great advance. "There is no question of any plan mediating between the particular and the uniformity of Space-Time;

<sup>17</sup>S. T. D., I, p. 226.

<sup>18</sup>S. T. D., I, p. 222.

the plan is an embodiment of that uniformity. The universality of the plan is the capacity of Space-Time to respond on each occasion according to this plan."<sup>19</sup> And further: "The habit of Space-Time to which it (the universal angle) is equivalent is the *possibility* of the existence of such a configuration at any point."<sup>20</sup> A universal then is no *thing*, but rather a capacity, a possibility. And Space-Time itself is the basis of this possibility. It is the constant curvature of Space-Time, the fact that this entity is uniform in its relation to bodies so that a body does not suffer distortion when it changes its place, which is the *possibility* of identity in kind between particulars and hence is universality. There are particulars, and there is uniform Space-Time in which they may be identical in one or more ways in spite of their differences in place and date and hence, in spite of their particularity. And this is the fact of universality.

Hence the problem seems solved and we are tempted to set aside the initial contradictions as incidental. All beings are particular, and they are distinct in virtue of their spatio-temporal differences. But if Space-Time is uniform then, as elementary geometry teaches, difference in place and date is quite compatible with identity in character. Such universality is properly termed a possibility or capacity because it is precisely such possibility that Space-Time guarantees. So far as Space-Time is concerned, the same plan may be repeated anywhere, for a uniform structure does not specify the *particular* nature of what is here as distinct from what is there. Hence that possibility of repetition which is the sign of the universal. Thus, meeting the objection that this conclusion contradicts Einstein's general theory, Alexander says: "When I say that bodies do not change their configuration by displacement in Space-Time,

<sup>19</sup>S. T. D., I, pp. 219-20.

<sup>20</sup>S. T. D., I, p. 219, my italics.

I mean this *only so far as Space-Time itself is concerned*."<sup>21</sup> In the presence of a gravitational field, with which matter is here identified, warping occurs, but not in "Space-Time" itself. Hence the initial indetermination which is the capacity of repetition.

Now it is obvious that all this depends upon the distinction between Space-Time and matter being sharply **drawn**. No particular event can be a possibility in this sense, and if Space-Time is not to be distinguished from the particular bodies then it loses this indetermination and uniformity. On precisely this basis Whitehead has argued against the general theory of relativity for failing to make such a distinction.<sup>22</sup> If Space-Time is to be merged with matter and physics reduced to geometry then uniformity is lost and Space-Time is as particular as bits of matter, which, according to Eddington, it constitutes. Hence the alternative rendering in which a sharp distinction is still made between form and matter, Space-Time falling on the former side as a "locus of relational possibility". It possesses "constant curvature" because it does not constitute events in their specific particularity but only relates them in a uniform structure.

Whether this criticism holds ultimately against Einstein may be doubted, for that theory does seem to guarantee some measure of uniformity, at least in space-time interval. But it does hold obviously against Alexander himself. Surely he is of all men the least entitled to distinguish between "Space-Time itself" and that which occupies it, or which it relates. For the determinate being of particular things as particular is constituted by the Space-Time which they are. Each event, so far as it is different from any other, is thereby a warp in Space-Time; the difference is not something extrinsic to Space-Time

<sup>21</sup>S. T. D., I, p. vii, my italics.

<sup>22</sup>S. T. D., I, p. viii emphasizes Alexander's view. For Whitehead's statement see especially *The Principle of Relativity*, Chapters 2-4.

itself and to which it is indifferent, the difference is Space-Time and so far as particular things exist at all Space-Time is *not* uniform. More recently Alexander has referred with approval to Eddington's suggestion that matter is a warp in Space-Time and not a distinct and additional entity, has treated it as in harmony with its own hypothesis.<sup>23</sup> What this leaves of the distinction between "Space-Time itself" and particular things, the distinction which Alexander himself was constrained to draw to find a basis for universality, it is difficult to see.

The situation is the familiar one. So long as you distinguish form and stuff you may have diversity in one respect, identity in another, but when they are identified your Space-Time is held to be diverse in precisely the sense in which it is uniform. The appeal to "possibility" will not help, for there is no vestige of possibility in actual occurrences and to such the world is limited. Nor will relations or laws help to make the distinction, for in pure Space-Time the relation is of the same stuff as its terms and the plan is not distinct from its execution. That Alexander should thus be forced to break completely with his own absolutism only by accepting the principle of "warping" he previously recognized as destructive is indeed instructive.

With universality we found Space-Time too substantial to account for universals, or even for the possibility of universals. With substance the opposite difficulty arises. The definition of the category is admirable. By substance we mean "the persistence of a piece of space in time"<sup>24</sup> or "the persistence of this including space through a lapse of time."<sup>25</sup> What substances does Space-Time offer us? There can be no doubt. Pure events or point-instants are the elements of Space-Time, hence the category of sub-

<sup>23</sup>*Spinoza and Time*, p. 40.

<sup>24</sup>S. T. D., I, p. 271.

<sup>25</sup>S. T. D., I, p. 270.

stance applies primarily to them. "The simplest substance is consequently a movement. When we take this substance in its limiting form we have the point-instant which may thus be called a momentary substance. For a point-instant is by its very nature a movement, not something statical. It is an ideal, not an actual movement; and just for this reason it is the actual elementary existent, and is real just in virtue of its ideal character."<sup>26</sup> There is no escape from this conclusion if motion is reducible to positions, to point-instants. But the contradiction is obvious. A substance was to be a contour of space persisting through a duration, but the element of Space-Time is an extensionless point occurring at a durationless instant. A point is not a piece of space and an instant is not a duration of time hence plainly the category as defined is not applicable to them. It requires concrete events with some unity of their own, not the bare diversity of positions. But our absolute and primordial reality has none to offer. Too much of a stuff to account for form, it is yet far too formal to account for substance.

In the case of causality the very definition indicates the difficulty. "This relation of continuity between two different motions is causality."<sup>27</sup> Only if motions are different is the one said to cause the other. "The mere continuance of the same uniform motion is as we have seen not a causal connection. The only identity between cause and effect is to be found in their continuity."<sup>28</sup> Yet equally, as the above quotation asserts, they must be continuous, for such continuity is causality. Now if motion were distinct from Space-Time this would be quite legitimate. The motions must be distinct as motions, but they might still be continuously connected by their dates and places. Johnson has recently shown how much discontinuity of this sort is

<sup>26</sup>S. T. D., p. 272.

<sup>27</sup>S. T. D., I, p. 279.

<sup>28</sup>S. T. D., I, p. 285.

compatible with continuity in Space and Time.<sup>29</sup> But that depends precisely on distinguishing concrete extensions and durations from points and instants. Here there is no such distinction and Space-Time is Motion. Hence if motions are discontinuous as motions, as they must be on this hypothesis, they are not spatio-temporally continuous, while if they are continuous as the definition demands, they do not possess the requisite diversity. Once more they must be identical in precisely the sense in which they are said to differ.

Other categories and especially intensive quantity illustrate the same difficulty, but we must turn directly to relation itself, for the heart of the difficulty lies here. The devastating assumption throughout is that relations can only be real if they are of the same stuff as their terms. To be equally real they must be the same kind of reality, even the same reality. Green and the idealists are controverted once we realize that "If the bits of Space are points they are connected by the points which intervene. Relations in space are possible because Space itself is a connected whole, and there are no parts of it which are disconnected from the rest. Whether we call Space and Time a system of points and instants or of relations is therefore indifferent."<sup>30</sup> And "on our hypothesis it is clear that in the end all relation is reducible to spatio-temporal terms."<sup>31</sup> The result is inevitable. Once the relation is reduced to stuff it ceases to be a relation and no longer relates. So we saw for each of the categories. If universality is substantialized you need a third thing to relate the particularized universal to its instances, if structural continuity is identified with the diversity of movements, it fails to connect them, if the relation "between" point-instants is only another point-instant, it fails to connect them. If the terms

<sup>29</sup>*Logic*, Part III, Chapter XI.

<sup>30</sup>S. T. D., I, pp. 166-7.

<sup>31</sup>S. T. D., I, p. 239.



are to be identical in kind they must have something in common, but it certainly cannot be the space-time of either for they are diverse and exclude each other. Neither can it be a relation for that is a third space-time "outside" of them both. But repetition is no longer necessary.

The result of this situation brings us to the denial of relativity in our second sense. Since relations are made of Space-Time they depend upon it in a new sense. Any relation is incomplete in itself and in that sense depends upon the term it relates; it must always be a relation *of*. But now it depends materially upon Space-Time as the stuff of which it is made. Thus when Broad attempts to resurrect the relational view of Space and Time the reply is not that such relations depend upon concrete terms, which is true enough and illustrates the relativity of form and matter, but that they are themselves such terms and depend upon the stuff of which they are made. "If I am right, then these so-called neutral concepts, relation, number and the rest, are themselves *made of Space-Time* and presuppose it, and they are not neutral but concrete like Space-Time."<sup>32</sup> Hence the dependence is not reciprocal. A table could not be what it is apart from the wood of which it is made, but the wood itself could perfectly well have existed without being fashioned in this particular way. So a relation is a particular configuration of Space-Time and does not determine Space-Time in itself. And so of the other categories. "Just as a roll of cloth is the stuff of which coats are made but not itself a coat, so Space-Time is the stuff of which all things, whether as substances or under any category, are made."<sup>33</sup> Hence the inevitable conclusion, from which our author does not shrink. "There is a well-worn proposition familiar to idealists, and derived from Kant, that the source of the categories is not itself

<sup>32</sup>Mind, N. S., Vol. 30, p. 411, my italics.

<sup>33</sup>S. T. D., I, p. 341.

subject to the categories. This proposition is true. They apply in our conception of the matter to the empirical things which are special configurations in Space-Time and because they are such; but they do not apply to Space-Time itself."<sup>34</sup> That which is related is relative, but the whole Space-Time is related to nothing, hence unconditioned.

We are back with the early Greeks, and the properties of the world are to be explained by the material of which it is made. The justification of the categories is then on a par with the assertion that if all the world were rubber every bit of it would stretch. So the categories are the properties of Space-Time, following from it but not conditioning it. And though Alexander denies that they are mere adjectives of this absolute he adds in the same sentence that they are "features" of it, "*in the sense in which red is a feature of this rose*".<sup>35</sup> The relational structure on which the specific categories were to be based cannot be a real basis, for this structure is itself a mere "feature" which does not condition the reality in its absoluteness. All are derivative and above them all stands the "One". True we have described it in just such relational terms but that is apparently secondary. "Our description of Space-Time itself and of the features which belong to any bit of it is but a means of reaching by thought to what is deeper and more fundamental than the products of thought."<sup>36</sup> Why the entities described should be here set down as "products of thought" by Alexander of all men is by no means clear, but that the whole relational structure with which we have been working is now quite secondary seems plain. Bradley could hardly ask for more.

The contradiction between the relative and absolute views has here reached its climax. On the one side there is the view with which the work began. There neither

<sup>34</sup>S. T. D., I, p. 337.

<sup>35</sup>S. T. D., I, p. 197.

<sup>36</sup>S. T. D., I, p. 337.

Space nor Time was complete in itself and the required combination demanded a highly articulated system of perspectives, conditioned through and through by relations. Only in this form and as thus related could Space-Time be real at all. And if that were true then quite emphatically Space-Time *is* subject to the categories. The nature of a line of advance is quite incomprehensible apart from causality, and relation above all is fundamental. Unless these various relations which are the categories held for Space-Time, there would be no Space-Time. True enough the dependence is reciprocal, but that is the last thing in the world from the one-sided dependence here asserted.

On this view Space-Time is neither "source" nor "whole". It is not the independent stuff which may not be formed into a coat, only as formed in this particular fashion does it exist. Nor is it a "whole" in any absolute sense. A whole of perspectives would be conditioned by its parts and specifically conditioned. It would be less absolute than its various determinations, not more so, for it is the synthesis of them.<sup>37</sup> To say there is nothing external to it is to forget its temporal character, its radical incompleteness, which presupposed relation to a future which is still to be. Of course a relational structure is not relative in the same sense as concrete things, as Alexander's examples are meant to show, but it is no less relative. If it is stuff it is relative to its determinations and exists as thus determined, if it is structure it is relative to the events it relates. Only by robbing each element of its essential character has this absolute been attained.

There is no doubt that the second and absolute view of Space-Time has now triumphed. The indentification of opposites is positively breath-taking. "Infinite Space and infinite Time are one and the same thing, and cannot in

<sup>37</sup>This is more fully developed, with reference to Alexander's notion of "total" Space and Time, in our analysis of the theory of knowledge.

reality be considered apart from one another."<sup>38</sup> But it was just because they were distinct as such and radically distinct, that each could save the other. "The infinite Space-Time is the totality of all substances, but it is prior to the substances by whose composition it is described."<sup>39</sup> Yet it was the differentiation of point-instants, specifically designated as substances, which conditioned the very being of Space-Time. Nor is the future external for, "in the re-distribution of dates among places, new existents are generated *within* the one Space-Time"<sup>40</sup> so that all change is within the absolute, precisely as Bosanquet would desire. And so on. The relative view is now completely superseded, determinations are within but not *of* absolute.

Finally we must notice the type of revenge which a relational world will take on this type of absolutism. It will be remembered that relation, Space and Time were defended by our author against the Bradleyan dialectic on the ground that a world of togetherness and distinctness accounted for all without contradiction. If relatedness is itself ultimate, there can be no paradox about relations. But when that ultimacy is surrendered disaster is to be anticipated. "And now mark the revenge which the universe takes upon those who do not accept it on its own conditions."<sup>41</sup> (a) The continuity of Space and Time was impugned by Bradley and the answer was that this criticism applied only to "abstract" Space and Time, not to their concrete connection. And the idealist was said to have fallen into this error because he treated relations as if they did not relate. But we have seen Alexander fall into the same pit. There is no more "continuity" in a point-instant than in its elements, the abstraction is as great as ever. Nor can the connection be between them,

<sup>38</sup>S. T. D., I, p. 340.

<sup>39</sup>S. T. D., I, p. 341.

<sup>40</sup>S. T. D., I, p. 339.

<sup>41</sup>S. T. D., I, p. 260.

for the relation is of the same stuff as the terms. And it is so treated precisely because it does not of itself relate. The difficulty remains, and for the same reason precisely.

(b) Bradley discovered a possible plurality of time series with no genuine connection in Time. Once more Alexander rises to the defence. "Since Time is spatial, the unity of these time-series in Time is secured by their unification in Space, by their belonging to the one Space. Occurring in the one Space, these time-series are connected in Time by the temporal relations between their respective places. Correspondingly the unity of all Spaces is secured by their belonging to one and the same time-series."<sup>42</sup> The circularity of all this is inescapable. We were first told that purely temporal unity was inadequate and some further connection required to save it. Hence "independent" lines of advance were specifically recognised. But the unity of these series must be that of a container in which they occur. Hence the "one" Space. But why "one" Space when Space is supposed to be differentiated by Time and hence partake of its differences? Because all spaces belong to "one and the same time series". But then there are not many time series and the initial defect remains. Or if there are, then not one Space, since a single time series was to unify it. The procedure is self-destructive throughout.

This final difficulty is not introduced to resurrect old scandals but because its basis is now so obvious. Relations are not a sufficient form of unity, they must be "in" *one* Space and *one* Time and only so can diverse elements be related. Betweenness must be subordinated to an embracing medium because "relations of space and time are intrinsically for metaphysics relations *within* Space and Time, that is within extension and duration."<sup>43</sup> Only such

<sup>42</sup>S. T. D., II, pp. 234-35.

<sup>43</sup>S. T. D., I, p. 174.

a medium, itself above relations, can account for the relations within it. Hence the unity of many time series can only be a container which flatly contradicts their diversity. All of Bradley's difficulties apply with redoubled force, and for the same reason. In a super-relational unity the diversity and relativity of spatial and temporal positions is indeed incongruous, and the result of Alexander's hypothesis is the best proof of that fact. A relational unity of perspectives is precisely what Space-Time ought to be, the relation is the connection and there the matter ends. But if relation itself must be *in* and *made of* a prior absolute we are forced back to the very blank unity of one undifferentiated Space which was initially rejected for the best of reasons.

It will be remembered that the final advantage of this theory was its treatment of the "one" and the "many". Differences were not to be superseded because "The One is the system of the Many in which they are conserved, not the vortex in which they are engulfed."<sup>44</sup> It can now

<sup>44</sup>S. T. D., I, p. 347.

be seen that it is exactly the reverse. Only in blank extension are terms and relations of the same stuff and we learned at the outset that in such extension there is no differentiation of parts. That came with perspectives, and there no such homogeneity remains; the relation between two perspectives in different series is not a space or time in either. Nor can they be in a further space-time, for this would either be differentiated in the same way and hence in need of further unity or it would be undifferentiated and then "open to fatal objections" as Alexander told us at the outset. Unless the differentiations are determinations of *it*, then it is no reality; if they do distinguish it in the required fashion it is a sum of perspectives on different lines of temporal advance and lacks the only sort of unity our author can provide for it. The vindication of Bradley is

complete. The relations fall outside the unity and our intellect cannot tell us how they can belong together. And the reason is that the unity we envisage is super-relational, a unity which excludes the very distinctions upon which a world of "togetherness and distinctness" would depend. If the many are really different their relations cannot be "homogeneous" with the terms, for the terms are not homogeneous with each other. If the many are really connected, then we were mistaken in regarding them as really different for, in the end, all are reducible to a single stuff and the differences within this single stuff are again not real differences, else they could not be connected by homogeneous relations.

The theory of knowledge carries on this conflict and provides a final witness for the destructive nature of the absolutism here in question.

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